EPRI

Proceedings: Third National Green Power Marketing Conference

Selling Green Power in Competititve Markets

June 25-26, 1998, Sacramento, California

Electric Power Research Institute
U. S. Department of Energy
Edison Electric Institute
Renewable Energy Alliance

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Selling Green Power in Competitive Markets
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REPORT SUMMARY

Competitive electricity markets should substantially expand green power industry development. However, the success of green power as a value-added electricity product will depend on a host of factors, including conducive market rules, supportive renewable energy policies, public education, use of environmental partnerships, recognition of multiple market segments, and product innovation. The Third National Green Power Conference reviewed green power marketing in the context of restructured electricity markets and provided insights into successful business strategies.

Background

Green power is a market-driven product developed to meet expressed customer preference for electricity derived from renewable sources such as solar, wind, biomass, and geothermal. Studies show that consumers, when informed, will consider more than price in making electricity purchase decisions. This conference, as the previous two (documented in TR-106986 and TR-109179), took important steps in reaching those consumers.

Objective

To provide insights on marketing green power resources in a competitive arena.

Approach

The U.S. Department of Energy (DOE) and EPRI—in association with the Edison Electric Institute (EEI) and the Renewable Energy Alliance (REA)—organized the Third National Green Power Conference, held June 25-26, 1998, in Sacramento, California. The Sacramento Municipal Utility District and the California Energy Commission (CEC) served as local hosts for the conference. More than 120 conference attendees gained insight and perspective on emerging green power markets from regulators, electricity customers, and representatives of the green power marketing industry, utilities, and public interest groups.

Key Points

Market research shows that most consumers do not know where their power comes from and think that electricity generation is cleaner than it actually is. However, when consumers are informed and educated about the environmental differences among generation sources, many are willing to pay more for cleaner energy sources. Some business customers also value clean energy choices and may be willing to make green power purchases, either as a competitive business advantage or as a way of reinforcing the company's own environmental ethic.

Consumer information, education, and marketing will be key to the success of green power marketing. Consumers must be assured that the products they are purchasing actually result in environmental improvement. Several efforts are underway to design and implement information disclosure programs, certify green power, and establish advertising and marketing guidelines.

New rules and mechanisms established for restructured electricity markets are critical both to the development of competition in general and the success of green power markets in particular. In California and Massachusetts, for example, there is no retail energy price margin against which marketers can compete, so these markets will be "value-added" only. Pennsylvania offers customers a retail "shopping credit," creating a retail energy price margin that will provide an excellent market environment for green power sales.

States can support emerging green power markets with appropriate policies. Both California and Massachusetts adopted the use of a system benefits charge (SBC) to support renewables during the transition to competitive markets. In California, the SBC will support a combination of existing, new, and emerging renewable technologies. It will also provide customer rebates for green power purchases and consumer education. In Massachusetts, the fund will create incentives for change in the green power marketplace.

EPRI Perspective

The number of utility green-pricing programs continues to grow. More than 30 utilities have either developed or announced plans to develop green-pricing programs for their customers. While these programs differ in size, pricing, customer targets, and other factors, key elements of successful green-pricing programs include strategic partnerships to effectively drive the market, customer aggregation, well-designed tariffs, and focused programs that can demonstrate environmental benefits.

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1

OVERVIEW

Green power is a market-driven product developed to meet expressed customer preference for electricity derived from renewable sources such as solar, wind, biomass, and geothermal. Over the last several years, more than 30 electric utility companies have designed green power service options for their customers as differentiated from the standard utility service. And now, as state electricity markets start to open to competition, a new industry is emerging to sell competitively priced green power products and services to discriminating consumers.

In June 1998, the **U.S. Department of Energy** (DOE) and the **Electric Power Research Institute** (EPRI), in association with the **Edison Electric Institute** (EEI) and the **Renewable Energy Alliance** (REA), organized the Third National Green Power Conference in Sacramento, California. The theme of the conference, "Selling Green Power in Competitive Markets," recognized that moving toward competitive electricity markets will have a significant impact on the green power industry's development. The **Sacramento Municipal Utility District** and the **California Energy Commission** (CEC) served as local hosts for the conference.

More than 120 conference attendees gained insight and perspective on emerging green power markets from representatives of the green power marketing industry as well as from regulators, utilities, public interest groups, and electricity customers. General consensus seemed to be that, as electric industry restructuring unfolds, market potential for green power services should expand substantially. However, the pace and extent to which the market develops will depend on supportive market rules and policies.

Several key messages emerged from the one and a half-day conference:

Consumers, when informed, will consider more than price in making electricity purchase decisions.

Market research shows that most consumers don't know where their power comes from and think that electricity generation is cleaner than it actually is. However, when consumers are informed and educated about the environmental differences among generation sources, they are willing to pay more for cleaner energy sources. A series of utility-sponsored "deliberative polls" in Texas reinforce these findings. Business customers also value clean energy choices and will be willing to make green power purchases either as a competitive business advantage or as a way of reinforcing the company's own environmental ethic.

Consumer information, education, and marketing will be key to the success of the green power marketing industry.

At the same time, consumers must be assured that the products they are purchasing actually result in environmental improvement. Several efforts are underway at the state and national levels to design and implement information disclosure, as well as to certify green power and to establish advertising and marketing guidelines.

The nature of rules adopted for the competitive marketplace will strongly influence the pace and development of green power markets.

Several green power marketers noted that new rules and mechanisms being established for restructured electricity markets are critical both to the development of competition in general and the success of green power markets in particular.

Attendees used the different rules that marketers face in California, Massachusetts, and Pennsylvania as examples. In California and Massachusetts, there is no retail energy price margin against which marketers can compete, so these markets will be "value-added" markets only. In these states, marketers must sell green power on its virtues at a premium to the retail price. Pennsylvania provides customers with a retail "shopping credit," which creates a retail energy price margin. As a result it is expected that, at least over the short term, Pennsylvania will provide the best market environment for green power sales.

States can support emerging green power markets with appropriate policies.

Both California and Massachusetts restructuring legislation adopted the use of a system benefits charge (SBC) to support renewables during the transition to competitive markets. In California, the SBC will be used to support a combination of existing, new, and emerging renewable technologies in the state. In Massachusetts, the fund will be used to create incentives for change in the marketplace, rather than to subsidize existing technologies.

In addition, specific policies can be adopted to support developing green power markets. In California, a portion of the SBC funds will be used as customer rebates for green power purchases, as well as for consumer education. And in Texas, the Public Utility Commission is considering a rule that would require all electric utilities in the state to offer a green power tariff to their customers.

The number of utility green-pricing programs continues to grow.

More than 30 utilities now have either developed or announced plans to develop green-pricing programs for their customers. These programs differ in size, pricing, customer targets, and other factors. Key elements of successful green-pricing programs identified by panelists included the need for strategic partnerships to effectively drive the market, customer aggregation, well-designed tariffs, and focused, clear programs that can demonstrate environmental benefits.

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KEYNOTE ADDRESS

After a brief welcome and introduction from **Jan Schori**, general manager of the **Sacramento Municipal Utility District**, Commissioner **Michal Moore** of the **California Energy Commission** (CEC) presented an overview of the Commission's renewable energy programs under California's electric industry restructuring law (AB 1890). AB 1890 provides for a transition to a fully competitive retail electricity market by allowing the investor-owned electric utilities the ability to recover their "stranded costs" over a 4-year period. The law also includes provisions for renewables and other public benefits programs. The CEC is charged with implementing the renewables program.

The overall purpose of the renewables program is to make the renewable energy industry competitive in California's electricity marketplace by the end of the 4-year transition period. To accomplish this, the CEC has established incentive programs for existing, new, and emerging renewable technologies, along with a system of rebates for consumers who purchase green power in the competitive marketplace. Among the goals of the program are to reward the most cost-effective suppliers of renewable energy, to develop a certification program for renewable energy, and to maximize the overall effectiveness of the fund.

Commissioner Moore provided the following examples of the CEC's progress in implementing its renewables program responsibilities:

- Fifty-six separate project bids were received in response to the solicitation for the new projects incentive fund, representing more than 600 MW of new renewables capacity.

- Ten companies have registered to participate in the customer credits program, offering 24 different electricity products with renewables content.

- The CEC has developed a "power content label," which will enable consumers to better understand their electricity choices. With the label, consumers can see at a glance the fuel sources and technologies used to create the electricity products they are offered.

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OVERVIEW OF U.S. GREEN POWER MARKETING

Ed Holt, of **Ed Holt & Associates,** provided a detailed overview of the domestic green power market. He reported that more than 40 green-pricing programs are being marketed by utilities with an average market penetration of about one percent and average premiums of between $1.82 and $7.49 per month. Mr. Holt noted that in some states these programs mark the beginning of the transition to competition, while in other states green-pricing programs may offer the only alternative service choices to customers for the foreseeable future.

In those few states where competition is being introduced, about a dozen green power marketers are currently active. However, these marketers face many obstacles such as high customer acquisition costs, slim profit margins, and the customers' slow pace of switching suppliers. Mr. Holt stressed that the success of green power marketing will depend on a host of factors including conducive market rules, supportive renewable energy policies, public education, use of environmental partnerships, recognition of multiple market segments, and product innovation.

Mr. Holt surmised that as a new market product, green power would follow the typical "S-shaped" product diffusion curve, capturing niche markets in the earliest stages and penetrating mainstream markets over the next 10 to 20 years. The speed with which green power penetrates mainstream markets will depend greatly on the success factors described above.

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PANEL DISCUSSION—IS THE MARKET WORKING?

The California electricity market opened to direct retail access on March 31, 1998. Several companies are marketing "green power" to customers, in both wholesale and retail markets, with a handful of other companies poised to enter the market.

Panelists were asked to discuss their experience of selling green power in the California market. What are the products being offered? Has green power marketing been successful or is it still too early to tell? What are the important measures of success? What about the market is working well and what is not? What lessons are being learned that can aid the development of competitive green power markets in other states?

The panelists identified several market needs. Most importantly, new rules and mechanisms established for restructured electricity markets are critical both to the development of competition in general and the success of green power markets in particular. A coordinated effort is needed among policy makers, marketers, trade and advocacy groups, and consumers to ensure that the restructuring of the nation's power markets leads to the increased use of renewables and, ultimately, to a cleaner environment. Also, absent a coordinated effort at the state or federal levels, it will be up to the green power marketers to change the way consumers perceive electricity generation and its environmental impacts for green power to be more than a specialty market niche. This means that a disproportionate amount of industry resources will be required for marketing and education.

Ryan Wiser, of **Lawrence Berkeley National Laboratory,** provided an overview of the green power market in California and products currently being offered. Approximately 100,000 customers, or 1% of all eligible customers, have requested to switch suppliers. While price competition is causing business customers to switch, residential customers have more limited choices because of the combination of high customer acquisition costs and low default electricity prices. Eleven of 16 residential marketers will offer green power products with prices ranging from 0.7¢/kWh to 3.4¢/kWh more than the California Power Exchange (PX) price, which represents the wholesale price.

The green power market has also spawned a new segment of industry intermediaries, such as wholesale suppliers, resellers, and a green power exchange. There are also a large number of green power products with high levels of environmental quality and marketing credibility. Mr. Wiser concluded that the success of California's green power market will ultimately require the coordinated

efforts of marketers, policy makers, trade associations, advocacy groups, and consumers.

Bud Beebe, Greenergy program director at the **Sacramento Municipal Utility District**, discussed the importance of marketing for green power. Most consumers do not know that they have power choices and view electricity as "something that comes with the house" rather than a product that they purchase. Since consumers do have a general sense of the environmental benefits of renewables, Mr. Beebe suggests avoiding lengthy descriptions of renewables and instead focusing on the development of marketing shorthand. The emphasis should be on getting customers comfortable with the fact that they do have a choice about how their electricity is created.

Julie Blunden, vice president of new markets for **Green Mountain Energy Resources**, emphasized that consumers consider more than price in their purchasing decisions. This point is central to the success of green power as a value-added electricity product. In fact, Green Mountain's least expensive green-power product has been the least popular among California customers. At the same time, the rules under which competitive electricity markets are being developed will make or break the market for green power. To illustrate, Ms. Blunden described the different rules that marketers face in California, Massachusetts, and Pennsylvania.

In California, marketers must compete against the wholesale electricity price. Since there is no retail price margin, California is a value-added market only. In Massachusetts, the default electricity price to consumers was set *below* the wholesale price and thus alternative suppliers are generally avoiding this market altogether. Pennsylvania instituted a "shopping credit," which provides for a retail energy price margin. Also, customers must actively switch suppliers to take full advantage of the price reductions available in the market, which will encourage a relatively high number of customers to switch. In both California and Massachusetts, all residential customers receive a guaranteed rate reduction, regardless of whether they switch suppliers.

Ms. Blunden also discussed the key marketing messages being used to attract customers in the California market. First, customers must understand that they have a choice for their power supply. Second, they must know that the reliability of their electricity service will be unaffected by switching suppliers. Finally, customers must make the connection between electricity generation and pollution and understand that they can positively affect the environment by choosing green power.

Jan Pepper, of the **Automated Power Exchange** (APX), reported on the opportunities for both buyers and sellers of green power in the APX Green Power Market. APX operates a week-ahead, hourly market that matches buyers and sellers of 100% renewable power at any time based on the "brown-market" price of power plus a green premium that is determined by supply and demand in the green power market. Ms. Pepper reported that the green premium has been averaging about 1¢/kWh in the APX. The virtues of the APX Green Power Market include a

diversified portfolio of sellers and buyers, ease of use without complicated auction rules, and prices that reflect market valuation of renewables.

In the future, Ms. Pepper envisions the market's moving to a wholesale green ticket system in which green power is split into two components—energy delivered in real-time and a green ticket representing the actual greenness of the power. This will allow the green premium to be traded over longer periods than hourly and provide additional opportunities for generators of intermittent renewable power supplies.

Janel Guerrero, of **Enron Corporation**, spoke on behalf of the **Renewable Energy Alliance**, a trade association of green power marketers of which Enron is a founding member. The Alliance was formed to ensure that electric industry restructuring leads to increased use of renewable power sources and a cleaner environment. Ms. Guerrero endorsed many of the earlier comments about the importance of market rules in assuring the development of robust competition.

Ms. Guerrero also discussed some activities of the REA, which include testimony and other comments regarding disclosure requirements, customer credits, advertising, and education efforts in Massachusetts, Pennsylvania, and California. The group is also working on a position paper on information disclosure and a set of restructuring principles to support developing green power markets.

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PANEL DISCUSSION—WHAT IS THE MARKET?

Market research results consistently indicate that a high percentage of consumers prefer cleaner energy sources and are willing to pay more for these sources. Less well known is how these consumer preferences might translate into purchase decisions by larger customers, particularly among municipalities and businesses. To date, only a small number of California businesses and municipalities have made green power purchase commitments.

Panelists were asked to describe possible motivations, as well as barriers, for municipalities and businesses to purchasing green power. What types of green-power products and services are attractive to larger customers? To what extent can municipalities and businesses play a role in aggregating loads or otherwise facilitating green-power commitments by other electricity customers?

Burk Kalweit, of **EPRI**, described EPRI-sponsored market research on "green" customers. As with other studies, EPRI research has identified a core market segment of about 25% of consumers who are most inclined to purchase green, with somewhat larger segments (totaling 37%) having lesser interest. Surprisingly, EPRI found that *all segments* could be swayed with the right marketing messages. Commercial customers generally have a low awareness of green power but do understand that green-power purchase commitments can project a positive corporate image and be a useful marketing device. Mr. Kalweit believes that the commercial opportunities for green power are probably larger than generally believed and that the ultimate success of the business lies with customer segmentation and education.

Steven Kelly, of the **Independent Energy Producers Association,** described the **Renewable Energy Marketing Board** (REMB)—a new nonprofit organization formed to promote renewables and persuade customers to switch (to green power) in California's competitive electricity market. The REMB has established a Renewable Energy Promotional Campaign to publicize the importance of renewables and the availability of choice in the marketplace and to facilitate customer switching. The REMB is talking with several California businesses to secure green power purchase commitments.

Jim Cooke, representing **Toyota Motor Sales, USA**, described Toyota's commitment to purchase approximately 12 MW (38 million kWh annually) of renewable energy to power several of its California-based corporate facilities. The purchase, totaling approximately $1 million per year, grew out of a corporate commitment to "exist in harmony with the earth," although it was necessary to educate management on green power. Mr. Cooke noted that the additional cost of the green power has probably already been paid back in favorable press reports. Toyota also views its green power purchase as a challenge to competitors and other corporate entities to make similar commitments, although Mr. Cooke suggested that one potential barrier to other large corporate green power commitments could be the availability of renewable energy supplies in the market.

Toyota also negotiated a 10% discount from the supplier, Edison Source, for employees who wish to purchase green power for their homes. Toyota views the program as a way to reinforce environmental responsibility with its employees.

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PANEL DISCUSSION—PRODUCT CREDIBILITY AND CONSUMER INFORMATION

For the green power market to be successful, consumers must understand that electricity generation has important environmental consequences and that, through their power purchase decisions, they can make positive changes in the generation resource mix, which today is heavily weighted toward fossil fuels and nuclear. It is also important to assure customers who choose to purchase green power that their purchases will lead to the use of cleaner energy sources.

Panelists were asked to provide updates on activities underway to provide consumer information, education, and product credibility. What types of information do consumers need to make educated purchase decisions? Are states and the federal government moving to make this information available to consumers? What mechanisms have been developed or are under consideration to assure product quality and build credibility for the green power market?

Mary Engle, with the **U.S. Federal Trade Commission** (FTC), addressed FTC guidelines and jurisdiction over the use of environmental claims in advertising materials. Advertisers must be able to substantiate all reasonable interpretations of claims made, whether expressed or implied. The FTC considers an interpretation of an advertisement to be reasonable if a significant minority of consumers interpret it in that way. Claims related to fuel mix and emissions in power sales would have to be substantiated. Green power marketers must comply with the Environmental Marketing Guidelines, or "Green Guides," established by the FTC. The term "green" is considered a general environmental benefit claim, and marketers must indicate why their product is better for the environment and be clear about the basis of comparisons made.

The FTC also scrutinizes third-party certification claims to ensure that these claims are truthful and substantiated. Thus, even with third-party certification, individual companies remain subject to FTC scrutiny. The FTC staff supports "uniform universal disclosure." According to Ms. Engle, uniform disclosure makes it easier for consumers to comparison shop, but also requires decisions about what type of information is disclosed and how and where it should be displayed. Most companies voluntarily comply with the FTC's Guidelines, but the FTC can take action against those who do not.

Kirk Brown, of the San Francisco-based **Center for Resource Solutions** (CRS), described the Green-*e* Renewable Electricity Program, a voluntary certification program for renewable energy-based electricity products. To be Green-*e* certified in California, a product must be at least 50% from "eligible renewable resource facilities," must contain no contracted nuclear power, and the nonrenewable portion of the product, if any, must have air emissions less than or equal to the system power mix. The real strength of the Green-*e* program is a requirement that suppliers have their power sources audited on an annual basis.

As of the conference date, ten residential and five wholesale products had been certified under the program, which indicates that the green power market is quite broad. In California, CRS is working to define a Green-*e* content standard for new renewables and a standard for low-impact hydropower. CRS is also working with stakeholder groups to adapt the Green-*e* program to the Massachusetts and Pennsylvania markets.

David Moskovitz, of the **Regulatory Assistance Project** (RAP), discussed work on information disclosure performed for the National Council on Competition and the Electric Industry. Through surveys and focus groups, RAP concluded that most consumers don't know where their power comes from and think that electricity generation is cleaner than it actually is. The work has also revealed how consumers react to disclosure labels and how the labels can be designed to be most effective. Using the same research design methods as used by the Food and Drug Administration for nutrition label development, RAP found that customers respond more favorably when a label is simple and uniform with three or four pieces of information. From this research, RAP designed a standard electricity disclosure label with information on price, fuel mix, and emissions that is being considered by the New England states. Other key research findings are that information disclosure is more important to consumers than third-party product certification and that disclosure should be mandatory.

Stan Rhodes, of **Scientific Certification Systems** (SCS), discussed the company's activities in certifying low-impact energy. Utilizing a life-cycle analysis (LCA) method, SCS assesses technologies and fuel sources on a "cradle-to-grave" basis to develop an "eco-efficiency" measure. Using LCA, some renewables may not be considered low impact. For example, the flooding of large areas of land for a hydropower project can trap biomass, which generates large amounts of carbon dioxide and methane over time. Mr. Rhodes noted that a considerable amount of value judgement is used in developing assessment criteria.

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STATUS REPORT ON RENEWABLE ENERGY TECHNOLOGIES

Ed DeMeo, of **EPRI,** presented an overview of cost and performance trends for renewable energy (RE) technologies. Much of the information that Dr. DeMeo presented is contained in a joint EPRI and DOE technology assessment of RE, "Renewable Energy Technology Characterizations," that is available in hardcopy from EPRI (report number TR-109496) or electronically from DOE (http://www.eren.doe.gov/utilities/techchar.html). During the last 20 years, RE technologies have made great strides in cost and performance, with several being fully commercial today. Dr. DeMeo identified the following technologies as available now for supplying the green power market: wind energy, biomass (direct combustion and cofiring with coal), landfill gas systems, geothermal using hydrothermal resources, and building-integrated or grid-independent photovoltaics.

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PANEL DISCUSSION—STATE APPROACHES TO GREEN POWER

States have adopted different approaches to support renewable energy deployment in the electricity market, whether as a component of electric industry restructuring legislation or under continuing utility regulation.

Panelists were asked to describe renewable policy approaches being pursued in their particular state, including: background on past renewable policies and their success (or lack thereof), rationale behind the development of current approaches, the relationship between current policy and the development of green power markets, and strategies and timetables for implementation.

Marwan Masri, representing the **California Energy Commission**, detailed the CEC's Renewable Technology Program that was established in the state's electricity restructuring legislation. The program will be funded through a system benefits charge that will collect $540 million over 4 years from customers of the three major investor-owned utilities. The fund is to be used to support existing, new, and emerging renewable technologies in the state.

The funding has been divided into four separate accounts: existing technologies ($243 million), new technologies ($162 million), emerging technologies ($54 million), and customer-side activities ($81 million). Distribution mechanisms include a production incentive for existing technologies, a bid auction for new technologies, a capital cost buy-down program for emerging technologies, and a customer rebate of up to 1.5 cent-per-kilowatthour for qualifying green power purchases. A small account was also created for consumer education.

Mr. Masri reported that the new technologies fund auction garnered 56 bids representing almost 600 MW of new renewables capacity for the state. He also described a new power content label adopted by the Commission that will inform customers of the energy resource mix contained in retail power products. In addition, 10 renewable energy providers are offering a total of 24 green power products that have been approved to receive customer credits.

Pat Larkin, of the **Massachusetts Technology Collaborative** (MTC), described the renewables fund that was created in the state's electricity restructuring legislation. The MTC will manage the fund, which will be collected through a system benefits charge on the state's electricity customers. Mr. Larkin noted that the Massachusetts fund is thus-far unique in that it will be used to create incentives for change in the marketplace, rather than to subsidize existing technologies. The MTC intends to first identify constraints to renewables in the marketplace and then target investments that ameliorate those constraints. Potential funding areas include information and analysis, technical assistance and training, project development, and financing.

Gillan Taddune, representing the **Public Utility Commission of Texas** (PUCT), described a rule under consideration that would require all electric utilities in the state to offer a green power tariff to their customers. {Editor's note: The rule was formally adopted on October 22, 1998} The genesis of the rule is a state legislative mandate to promote the development of renewable energy. The rulemaking is a direct outgrowth of a series of "deliberative polls" that found, in all cases, high levels of support for renewable energy and energy efficiency among customers as preferred utility resource options. The PUCT views the rulemaking as a means for supporting renewable energy development by giving customers the service choices that they want. Two of the more important elements of the rule include incremental cost-based premiums and consumer information and education to promote a greater understanding of resource options and their environmental impacts.

9

PANEL DISCUSSION—GREEN PRICING STRATEGIES

The number of utilities that have developed or announced green-pricing programs for their customers has risen sharply over the last 3 years. Moreover, these programs differ in size, pricing, customer targets, and other key factors. Panelists were asked to provide a definition of what, in their opinion, constitutes a "successful" utility green-pricing program and to provide insight into factors that contribute to success such as program design, product pricing, and marketing approaches. Several themes emerged from the discussion, including the need for strategic partnerships to effectively drive the market, customer aggregation, well-designed tariffs, and focused, clear programs that can demonstrate environmental benefits to customers.

Terry Peterson, of **EPRI,** addressed the progress of green-pricing programs in the U.S. in terms of growth and added renewable resources. More than 50 programs are now being offered in 15 states with nearly 40 MW of new renewables capacity being developed. Dr. Peterson noted that these programs are distributed across the U.S. with their inception attributable more to resource availability than to electricity prices or restructuring activity. While noting that experience to date predicts early program adoption rates of approximately 1% of customers, Dr. Peterson recognized the difficulties of gauging market penetration of green-pricing programs over the long term.

Blair Swezey, of the **National Renewable Energy Laboratory** (NREL), described work in progress on a green-pricing primer for utilities and regulators. Mr. Swezey noted that, while green-pricing programs can have several different measures of success, the size of the price premium is always an important determinant. On average, green-pricing premiums tend to range from 2 to 3¢/kWh. But premiums in some programs have been as low as 0.5¢/kWh and as high as 6¢/kWh. Factors that can affect price premiums include:

- the renewable technology selected for the program
- the size of the project
- the quality of the renewable resource

- financial variables, including debt/equity structures and the availability of subsidies or other incentives
- administrative and marketing costs, and
- the base ("avoided") cost against which the renewable project is compared.

The NREL study will examine the sensitivity of the price premium to these different factors.

Steven Rothstein, of **Environmental Futures, Inc.**, spoke on methods for aggregating customers for green power purchases. An aggregator is a buyer's agent who brings together individual electricity buyers to form a large pool that has greater market leverage to negotiate favorable terms and conditions of service. Aggregation can also result in more favorable customer load profiles. As of the conference date, aggregation is rarely being used specifically for green power products though it is being used in evolving competitive energy markets. Mr. Rothstein did describe one active national aggregation offer that includes energy efficiency. He noted that the Massachusetts electricity restructuring legislation explicitly allows for customer aggregation by any number of means, including residential, geographic, municipal, and businesses. Given that low standard offers will discourage marketing to residential customers in the early years of competition, aggregation can offer some interim value and savings to customers.

Barrett Stambler and **Andrea Kelly** of **PacifiCorp** reported on the "portfolio access" program being offered to Pacific Power customers in the utility's Klamath County (Oregon) retail pilot program. The program offers participating customers a choice from a portfolio of four different services: a standard utility price offer, a market price offer, a community-based offer that supports low-income customers, and a green power offer. The green power offer is priced at a 10% price premium for a 100% renewables product, which is a blend of 80% existing geothermal and 20% wind energy that will come from the company's new Wyoming wind project. The green-power product was developed in consultation with regional environmental groups. In the first phase of the program, 15% of participants chose the green-power service.

Bob McRae, representing **Ontario Hydro**, described a pilot program being developed to market renewable generation to business customers. Dubbed the GreenChoice Generation program, it would allow customers to choose how their energy is made. All GreenChoice Generation is certified from green energy sources by Canada's Environmental Choice program. Mr. McRae noted that successful green energy programs provide a range of features, including a transparent financial structure, a clear purpose and rationale, frequent updates on program activity and progress, and partnerships with environmental groups that lend credibility to the program. Mr. McRae urged the group to avoid such pitfalls as making vague promises and false claims, and pursuing programs that do not add new incremental renewables generation.

Rudd Mayer, of the **Land and Water Fund of the Rockies** (LAW Fund), emphasized the importance of using marketing partnerships spearheaded by environmental groups to create consensual and community-wide education, awareness, and outreach activities that promote broader public, private, and utility investment in clean energy options. Ms. Mayer argued that these partnerships are critical because costs to educate and inform customers may be too high for suppliers alone to undertake. Also, the environmentalist group can catalyze actions of governmental entities, businesses, and local organizations that the utility, by itself, may not be able to accomplish. According to Ms. Mayer, selling green power as an "ethic" opens certain doors to acceptance that "premium product" marketing does not.

Ms. Mayer used the example of the LAW Fund's partnership with Public Service Company of Colorado (PSCo) to promote the utility's Wind*Source* program. Activities have included involving state and local governments in promoting wind power; using media to garner support; promoting a leadership role for businesses in the area; involving area schools, churches, and hospitals; working with green developers and builders; and other grassroots activities.

Ms. Mayer noted several unforeseen benefits of the grassroots marketing campaign. The success of PSCo's program has encouraged several other Colorado utilities to also offer green-pricing programs, with the result that almost 100% of Colorado electricity customers will have a green power option in 1999, even without restructuring in the state. Also, PSCo recently committed to retrofit several coal-burning power plants with environmental controls, partly because of the expressed public support for clean power.

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B

WORKSHOP PRESENTATIONS

6/8/98

Third National Green Power Conference
"Selling Green Power in Competitive Markets"
June 25-26, 1998 — Sacramento, CA

Sponsors: *U.S. Department of Energy, Electric Power Research Institute, Edison Electric Institute, Renewable Energy Alliance*
Local Hosts: *California Energy Commission, Sacramento Municipal Utility District (host utility*

Day 1 — Thursday June 25

8:00- 8:30 Continental Breakfast

Chair: Chuck Linderman, Edison Electric Institute

8:30 – 8:45	Welcome Address	**Jan Schori, General Manager, Sacramento Municipal Utility District**
8:45 – 9:15	"Green Power in California's Electricity Future"	**Michal Moore, Commissioner, California Energy Commission**
9:15 – 9:45	"Overview of U.S. Green Power Marketing"	**Ed Holt, Ed Holt & Associates**
9:45 – 10:15	BREAK	
10:15 – 12:15	Panel Session – Is the Market Working? *Chair: Blair Swezey, NREL*	
	"California's Green Power Products"	**Ryan Wiser, Lawrence Berkeley National Laboratory**
	"Moving from Green Pricing to Green Marketing"	**Bud Beebe, Sacramento Municipal Utility District**
	"Early Returns from California"	**Julie Blunden, Green Mountain Energy Resources**
	"The APX Green Power Exchange"	**Jan Pepper, Automated Power Exchange**
	"What the Market Needs"	**Janel Guerrero, Enron**

6/8/98

12:15 – 1:30	LUNCH	
1:30 – 3:00	Panel Session — What is the Market	*Chair: Burk Kalweit, EPRI*
	"EPRI Market Research Results"	**Burk Kalweit, EPRI**
	"Marketing Green Power to Businesses"	**Steven Kelly, Renewable Energy Marketing Board**
	"Municipal Green Power Purchasing" (absent because of illness)	**Mary Tucker, City of San Jose**
	"Toyota's Green Power Commitment"	**Jim Cooke, Toyota Motor Sales, USA**
3:00 – 3:30	BREAK	
3:30 – 5:30	Panel Session — Product Credibility and Consumer Information	*Chair: Joseph Galdo, DOE*
	"Making Environmental Marketing Claims"	**Mary Engle, U.S. Federal Trade Commission**
	"The Green-**e** Program"	**Kirk Brown, Center for Resource Solutions**
	"Update on Information Disclosure Activities"	**David Moskovitz, Regulatory Assistance Project**
	"Certifying Low Impact Energy"	**Stanley Rhoads, Scientific Certification Systems**
6:00 – 7:30	RECEPTION	

6/8/98

Day 2 — Friday June 26

8:00- 8:30 Continental Breakfast

Chair: Blair Swezey, NREL

8:30 – 9:00	"Status Report on Renewable Energy Technologies: Prospects for Cost and Performance Improvements"	**Ed DeMeo, Electric Power Research Institute**
9:00 – 10:10	Panel Session — State Approaches to Green Power	
	"The California Renewable Resource Trust Fund"	**Marwan Masri, California Energy Commission**
	"The Massachusetts Renewable Energy Initiative"	**Pat Larkin, Massachusetts Technology Collaborative**
	"The Texas Green Pricing Rulemaking"	**Gillan Taddune, Public Utility Commission of Texas**
10:10 – 10:30	BREAK	
10:30 – 12:30	Panel Session – Green Pricing Strategies	*Chair: Terry Peterson, EPRI*
	"Green Pricing Scorecard"	**Terry Peterson, EPRI**
	"What Makes a Good Green Pricing Tariff?"	**Blair Swezey, National Renewable Energy Laboratory**
	"Aggregating Green Customers"	**Stephen Rothstein, Environmental Futures, Inc.**
	"The Portfolio Approach to Green Power"	**Barrett Stambler, PacifiCorp**
	"*GreenChoice* Program for Business Customers"	**Bob McRae, Ontario Hydro**
	"The Value of Marketing Partnerships"	**Rudd Mayer, Land and Water Fund of the Rockies**
12:30	MEETING ADJOURNS	

Third National Green Power Conference
"Selling Green Power in Competitive Markets"
June 1998

"Green Power in California's Future"
by Michal C. Moore

- California's electric-industry restructuring legislation gave utilities the opportunity to recover uneconomic costs over a four-year transition period
- The legislature hoped that, during that same period, California's renewable industries could become competitive with the help of ratepayer-funded programs totaling $540 million
- The legislature directed the Commission to develop programs to support:
  - → the operation of existing renewables, generally
  - → the development of new and emerging renewables
  - → the operation of certain biomass facilities, specifically
  - → the operation of certain solar thermal, specifically
- The goals of the programs, based on market principles, were to :
  - → reward the most cost-effective suppliers
  - → certify renewable providers
  - → provide customer rebates
  - → allocate at least 40 percent of the funds to new and emerging, and to existing
  - → maximize the effectiveness of the fund
- The Commission reported back to the Legislature, recommending:
  - → a program for existing renewables:
    - ⇒ three tiers
    - ⇒ a target price and payment cap for each tier
    - ⇒ an incentive payment for generation earning less than the target price
    - ⇒ incentive payments not to exceed 1.5¢/kWh

→ a program for new renewables:

⇒ an auction to distribute the full amount

⇒ production incentives for generation over five years

⇒ production incentives not to exceed 1.5¢/kWh

⇒ projects with the lowest bids win until all money has been distributed

⇒ winning bidders must submit a bond

⇒ winning bidders must meet milestones

⇒ rolled over money may be reauctioned later

→ a program for emerging:

⇒ a capital cost buydown program for installing small systems to offset customers' load

⇒ incentive starts at the lesser of $3 per watt or 50% of system cost

⇒ funding divided into five blocks with decreasing incentive amounts to encourage technologies to be increasingly competitive

→ a consumer-credit program:

⇒ a consumption credit not to exceed 1.5¢/kWh

⇒ a $1,000/customer cap for industrial customers

⇒ payments to providers who (1) purchase renewables and (2) sell them to consumers

⇒ include consumer education

→ Funding for each program was ramped differently to take advantage of market readiness over the four-year transition

⇒ existing starts high and ramps down

⇒ new starts low and ramps up as construction is completed

⇒ emerging starts high and ramps down

⇒ customer credit start low and increases with customer awareness

- The Legislature, through Senate Bill 90, endorsed the Commission's proposals with a few exceptions and directed the Commission to conduct the program
  - → eligible emerging technologies specifically defined as photovoltaics, solar thermal, small wind of 10kW or less, and fuel cells using a renewable fuel source
  - → distribution mechanism for emerging technologies changed from a request for proposals process to a capital cost buydown program
  - → cap for Tier 1 technologies changed from 3.5 cents/kWh to a minimum of 4 cents/kWh
  - → eligibility for funds from new account not contingent on location or nature of who buys the power
- The Commission developed guidelines to help applicants
  - → summarizes eligibility requirements
  - → describes how to participate
  - → provides application forms
- Current status
  - → existing
    - ⇒ 273 facilities registered as renewable suppliers
    - ⇒ 173 of those are eligible for and receiving funds
    - ⇒ $8.5 million was paid to existing facilities for renewable generation in January, February, and March 1998
  - → new
    - ⇒ auction complete
    - ⇒ 56 bidders
    - ⇒ results of auction to be announced first week of July
  - → emerging
    - ⇒ 81 buydown reservations received to date for $4.3 million (out of first $10.5 million block)
  - → customer credits

⇒ 10 companies have registered as renewable providers, with a total of 24 products containing a percentage of renewable energy

⇒ because of delay in market start-up, providers haven't started marketing renewable power or requested customer credit payments

- Problems to date:

→ dispute over eligibility of purchases from utility-owned renewables

→ cliff-date disputes could affect eligibility

→ need to clarify interpretation of CTC issues as they affect eligibility

THE POWER CONTENT LABEL

adopted in regulations by the California Energy Commission pursuant to SB 1305 on June 24, 1998

POWER CONTENT LABEL

ENERGY RESOURCES	PRODUCT NAME* (projected)	1997 CA POWER MIX** (for comparison)
Eligible Renewable	**55%**	11%
-Biomass & waste	-	2%
-Geothermal	-	5%
-Small hydroelectric	-	2%
-Solar	-	<1%
-Wind	-	1%
Coal	**10%**	21%
Large Hydroelectric	**12%**	23%
Natural Gas	**15%**	30%
Nuclear	**8%**	15%
Other	**<1%**	<1%
TOTAL	**100%**	100%

* 50% of **Product Name** is specifically purchased from individual suppliers.

**Percentages are estimated annually by the California Energy Commission based on the electricity sold to California consumers during the previous year.

For specific information about this electricity product, contact **Company Name.** For general information about the Power Content Label, contact the California Energy Commission at 1-800-555-7794 or www.energy.ca.gov/consumer.

Green Power: Where We've Been, Where We're Going

Third National Green Power Conference
Sacramento, California
25 June 1998

Edward A. Holt

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US Green Power Overview

40 Utilities, 12 Marketers

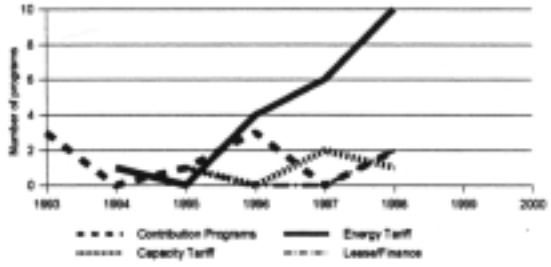
Utility green pricing
Competitive green power
+ Utility programs

Green Pricing Models

- Contributions
  - Bill round-up to next $1 or next $5
  - Customer option
  - Fixed monthly fee
- Energy tariff
  - Cents per kWh, 100% green
  - Blocks (100 kWh) for fixed increments
  - Percent options (25%, 50%, 100%)
- Capacity tariff
  - Units of 100 or 50 watts for fixed increments
- Lease to purchase/finance

New Programs Launched

By Type of Program



Green Pricing Stats (1998)

- Average monthly premiums (residential)
  - $1.82 contribution programs (5)
  - $6.46 energy tariffs (9)
  - $7.49 capacity tariffs (2)
- Average market penetration
  - 0.8% contribution programs (5)
  - 1.3% energy tariffs (7)
- Participating customers: about 45,000
- Renewable capacity: 45-50 MW

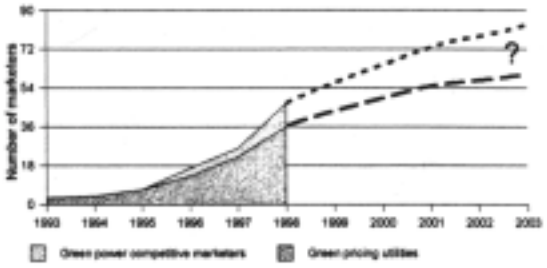
Electric Industry in Transition

Regulatory activity
Legislation proposed
Legislation adopted
* Competition pilot program

Competition Pilot Programs

- 20-30% of residential customers chose green options in NH and MA pilots
  - Saved money compared to regulated price
  - Products were weak--no incremental renewables
  - Did not choose the cheapest: consumers paid up to 50% more than competitive prices
- NH and MA not typical markets, but response indicates more than niche market
- PA pilots and Portland General Electric pilot

Green Power Marketers



Marketers Are At Risk

- Consumers are slow to switch
  - Estimated 0.75-2.5% range for year 1 in CA
- Mass marketing is expensive
- Profit margins are small
  - Enron withdrew from CA residential market
- How much can marketers afford to invest?
- How long can they afford to wait?
- Utilities and some independent marketers will survive, but will green power products?

What's Needed?

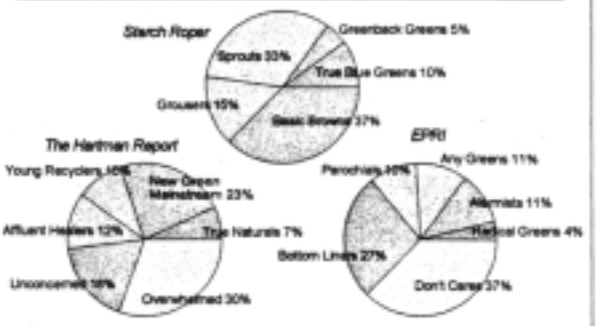
- Conducive market rules
- Recognition of multiple market segments
- Product innovation (added value)
- Public leadership
- Environmental partnerships
- Public education and information
- Supportive renewable policies

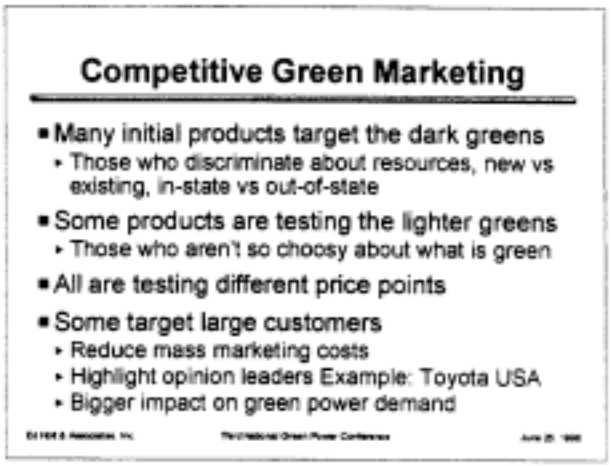
Will Consumers Switch?

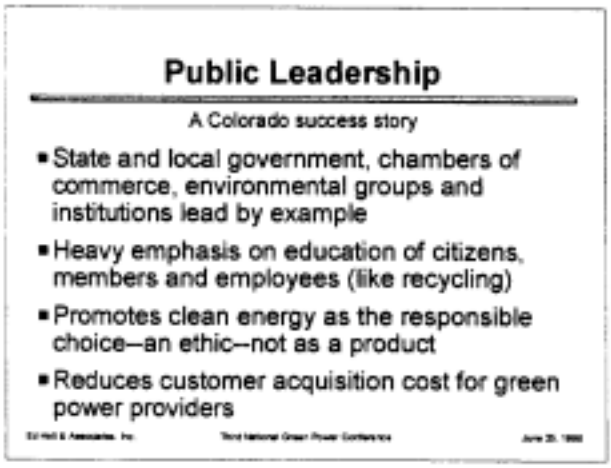
Market rules matter

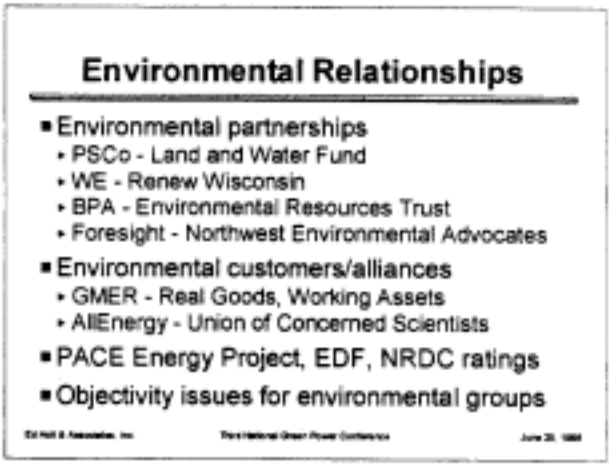
- Default generation service
  - Price set by regulators may be impossible to beat
  - Consumer savings are guaranteed without switching
  - Consumer inertia is strong
- Silver lining
  - Added value supports premium over default price
  - This may be why many of the marketers in California are selling green power.
- Consumer with fears about service reliability, confusion about billing, who to call, etc.
- Switching fees also discourage choice

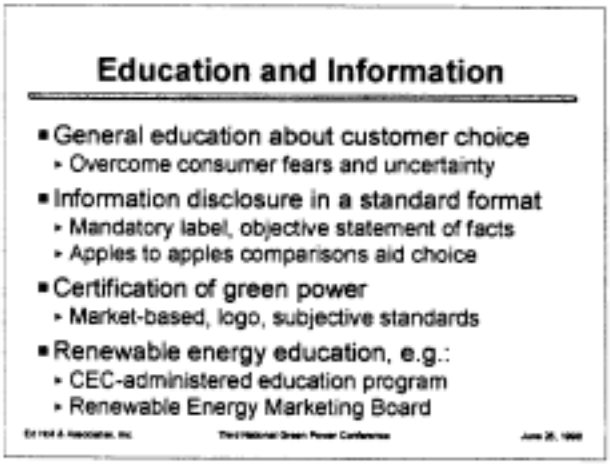
Market Segmentation




Competitive Green Marketing
Many initial products target the dark greens
Those who discriminate about resources, new vs existing, in-state vs out-of-state
Some products are testing the lighter greens
Those who aren't so choosy about what is green
All are testing different price points
Some target large customers
Reduce mass marketing costs
Highlight opinion leaders Example: Toyota USA
Bigger impact on green power demand


Public Leadership
A Colorado success story
State and local government, chambers of commerce, environmental groups and institutions lead by example
Heavy emphasis on education of citizens, members and employees (like recycling)
Promotes clean energy as the responsible choice—an ethic—not as a product
Reduces customer acquisition cost for green power providers


Environmental Relationships
Environmental partnerships
PSCo - Land and Water Fund
WE - Renew Wisconsin
BPA - Environmental Resources Trust
Foresight - Northwest Environmental Advocates
Environmental customers/alliances
GMER - Real Goods, Working Assets
AllEnergy - Union of Concerned Scientists
PACE Energy Project, EDF, NRDC ratings
Objectivity issues for environmental groups


Education and Information
General education about customer choice
Overcome consumer fears and uncertainty
Information disclosure in a standard format
Mandatory label, objective statement of facts
Apples to apples comparisons aid choice
Certification of green power
Market-based, logo, subjective standards
Renewable energy education, e.g.:
CEC-administered education program
Renewable Energy Marketing Board

Renewable Energy Policies

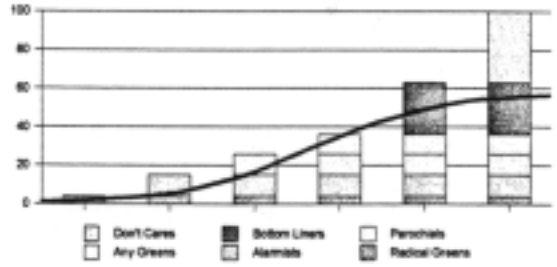
- Renewable portfolio standard
  - 5 states, also proposed federal requirement
- Surcharge or levy for renewables fund
  - 6 states, also proposed federal requirement
- Net metering
  - 20 states, small scale, customer-sited
- Production payments
  - 1 state, also federal incentive for wind, 1.5 cents per kWh

Renewable Policy by State

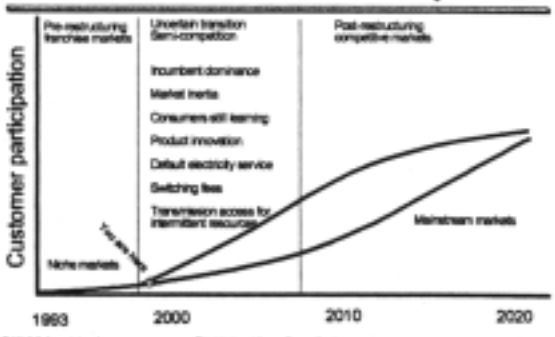
Portfolio requirement
Net metering
Net metering
Production payment
Renewable surcharge
Surcharge & net metering

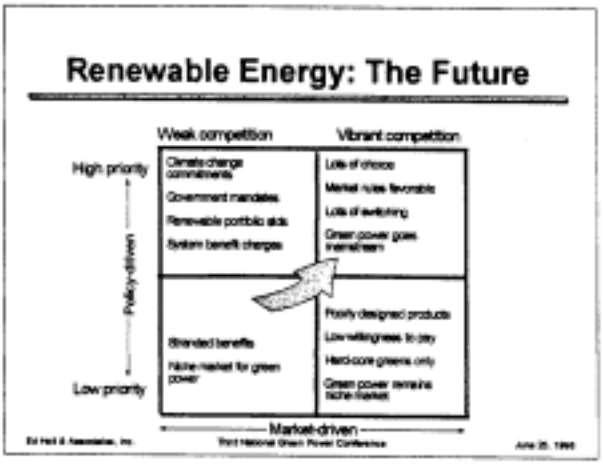
How Fast Will The Market Grow?

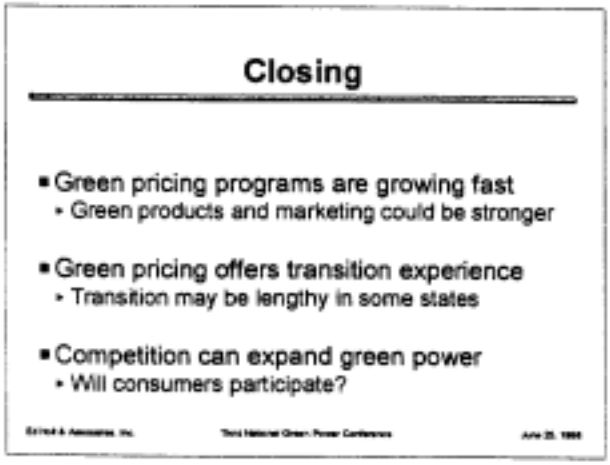
Diffusion of Innovation Concept



Green Power Roadmap







Green Power: Where We've Been, Where We're Going

Third National Green Power Conference, Sacramento, June 25, 1998

Edward A. Holt
Ed Holt & Associates, Inc.

Green pricing programs have been growing in number, with about 40 programs now being marketed. Average market penetration is about 1 percent, and the average monthly premium varies (depending on the type of program) from $1.82 to $7.49. In many states these utility programs are part of the transition to competitive markets, but in other states with less interest in restructuring, green pricing could be a source of customer choice indefinitely.

In restructured markets with retail access, there are now about a dozen green power marketers. But the stamina of marketers is being tested as mass marketing costs are high, profit margins are slim, and consumers are slow to switch to any alternative supplier, regardless of power source. The success of green power marketing will depend on a combination of factors: conducive market rules, marketer recognition of multiple market segments, product innovation, public leadership to promote clean energy as an ethic, marketer partnerships with environmental organizations, public education and information about electricity choices, and supportive renewable resource policies.

As a new product, green power will likely follow the diffusion of innovation "S" curve starting with niche markets and eventually capturing mainstream markets over a period of 10-20 years. How long this takes will be heavily influenced by the above factors overlaid by government environmental policy and the strength or weakness of competitive markets.

California's Green Power Products

Ryan Wiser
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Third National Green Power Conference
Sacramento, California
June 25, 1998

An Introduction to the California Market

- **Switching:**
  - 109,000 customers, or 1.1% of *all* eligible customers, have requested to switch
  - These "switchers" likely represent 7-10% of all eligible load
  - More than 95% of this switching load comes from large customers, with 66,000, or 0.8% of residential customers, asking for a switch
- **Large Customers:**
  - Price competition is robust, with 2-5% price savings common
  - Most competition based on price and other value-added services, but targeted green power purchases are occurring
- **Residential Customers:**
  - 16 marketers are or soon will offer products to residential customers
  - Two key factors have influenced nature of products: (1) high customer acquisition costs, and (2) low price of default utility generation service
  - Price competition is not robust, but savings of 0.5-2.5% are available
  - Provision of value-added products and services only viable entrée to market--at least 11 of the 16 marketers plan to offer green power products

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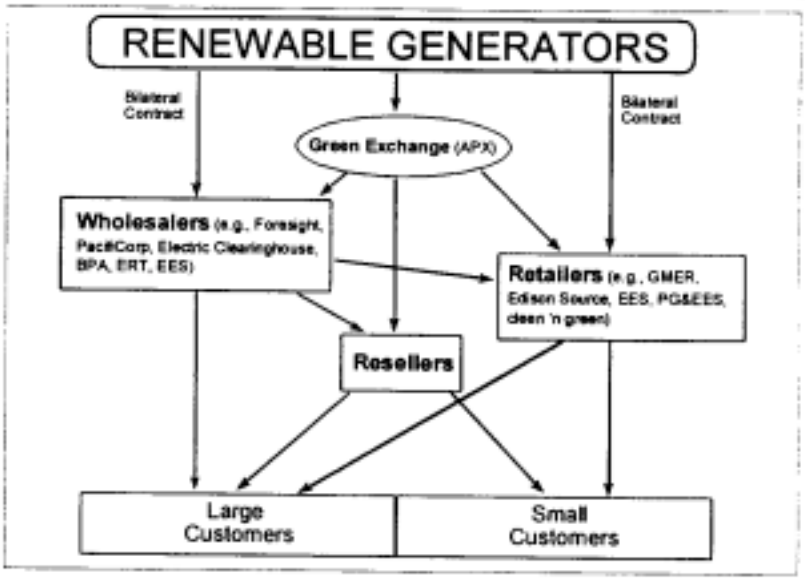
Green Power Market Structure



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The Green Power Marketers

RETAILERS

- Green Mountain Energy Resources
- Edison Source
- PG&E Energy Services
- Enron Energy Services
- cleen 'n green
- Friendly Power
- Keystone Energy Services
- PowerUSA
- PowerSource
- ITT PowerCom
- PowerCom Energy and Communications Access
- *Sacramento Municipal Utility District*

WHOLESALERS

- Foresight Energy
- PacifiCorp
- Electric Clearinghouse
- Enron
- Bonneville Power Administration
- Environmental Resources Trust
- Automated Power Exchange *(broker)*

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The Retail Green Power Products

Company	Product Name	Resource Mix
Edison Source	EarthSource 50	50% renewable; 50% system power
	EarthSource 100	100% renewable
	EarthSource 2000	100% renewable (10% new)
Enron Energy Services	Earth Smart Power	51% renewable (25% new wind); 49% large hydro *(product discontinued)*
GMER	Water Power	100% large hydro
	75% Renewable	75% renewable; 25% large hydro
	Wind for the Future	75% renewable (10% new wind); 25% large hydro
PG&E Energy Services	Clean Choice 20	20% renewable (5% new); 80% large hydro
	Clean Choice 50	50% renewable (12.5% new); 50% large hydro
	Clean Choice 100	100% renewable (25% new)
cleen 'n green	cleen 100	100% large hydro and natural gas
	green 50	50% renewable; 50% large hydro and natural gas
	green 100	100% renewable

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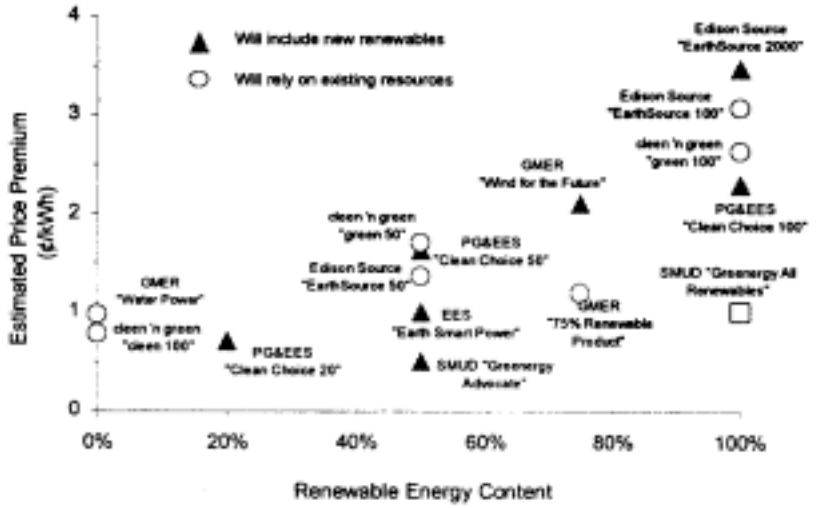
The Cost of Going Green



Energy Analysis Department

Conclusions

- Because of customer acquisition costs and the design of the market, residential marketers are very interested in green power
- Customers have a large number of green power products to select among
- Product environmental quality and marketing credibility is higher than in the New England pilot programs
- Prices are not exorbitant, ranging from 0.7 to over 3.4 cents/kWh
- Despite these promising signs, the fundamental question remains: Will the market be "successful"?
- If the market is to "succeed," it will take the coordinated efforts of marketers, policymakers, nonprofit advocacy groups, trade associations, and citizens

Energy Analysis Department

Relevant LBNL Reports and Papers

- Wiser, R. and S. Pickle. 1998. "Selling Green Power in California: Product, Industry, and Market Trends." LBNL-41807.
- Wiser, R., Pickle, S. and J. Eto. 1998. "Details, Details...The Impact of Market Rules on Emerging 'Green' Energy Markets." *Proceedings: ACEEE 1998 Summer Study on Energy Efficiency in Buildings.*
- Wiser, R., Golove, W. and S. Pickle. 1998. "Purchasing Power in California's Restructured Market: What's in it for the Customer?" Forthcoming in *Public Utilities Fortnightly.*
- Wiser, R. and S. Pickle. 1997. "Green Marketing, Renewables, and Free Riders: Increasing Customer Demand for a Public Good." LBNL-40632.
- Wiser, R., Pickle, S. and C. Goldman. 1998. "Renewable Energy Policy and Electricity Restructuring: A California Case Study." *Energy Policy*, 26 (5).

- For a periodically-updated list of California's retail green power products, see: *http://eetd.lbl.gov/EA/EMP/CAgrprod.html*

Energy Analysis Department

SMUD

Sacramento Municipal Utility District

www.smud.org/green

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Greenergy Program Manager
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→ The Need to Market

and

→ Marketing Barrier #1

Energy Service Providers will Need To Market

"Before deregulation, airlines spent about 6% of sales on marketing. After deregulation, successful Airlines spend 25% -27% on marketing", Maurice Gunderson

If 86% of the people prefer renewable energy, why will we have to market ?

Electricity Marketing Barrier #1

Customers don't know they have a choice

In fact,

They don't even know they buy electricity.

They think it's a tax or something

In America all people expect to have:

SHOES Washable Credit Card

Residence

Electricity? You don't BUY electricity. It comes with the house.

Gasoline

Marketing Costs Money

"...successful Airlines spend 25% -27% of sales on marketing", Maurice Gunderson

"Will Energy Companies Spend 10%, 20%, or 30% on Marketing ?", Yours Truly

(You're probably already spending more than you thought)

Marketing Dollars are spent on reaching Customers

Who are your Customers?

Utilities Commission? Legislature? Town Council?

BIG Marketing Dollars will come from...

SOMEWHERE

Did anybody notice (or care) where their Airline Marketing Dollars were spent ?

People have *DEVELOPED* expectations for Advertising

In general,
You don't want to attempt communication when customers are not ready

Consumers have never bought electricity before.

What are their expectations?

(Look in your bill)

The Use of Marketing shorthand may be more effective in telling people the truth than "one size fits all" definitions of what constitutes Green or Renewable

"On a gut level, many people already grasp the key difference between fossil fuels and renewable energy. One is stealing from our kids, the other isn't."
James Udall

Some Marketing increases Market Share

Some Marketing increases Demand

Because of Marketing Barrier #1, We first need to do a good job on increasing demand for customer's choice electricity.

A Need to Market the CONSUMER

◇

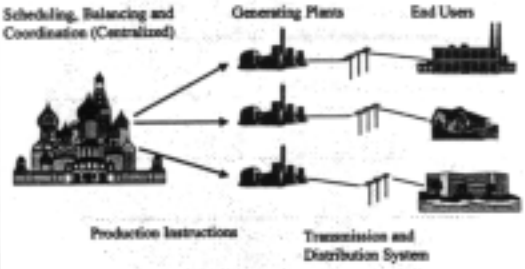
Get people comfortable with the notion that they REALLY DO HAVE ENERGY CHOICES

Opportunities in the APX Green Power Market

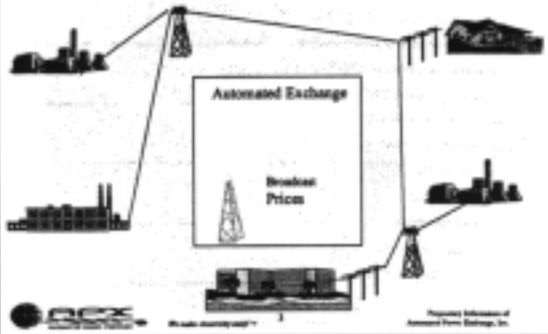
Third National Green Power Conference

Presented by:
Jan Pepper
Automated Power Exchange, Inc.
June 25, 1998

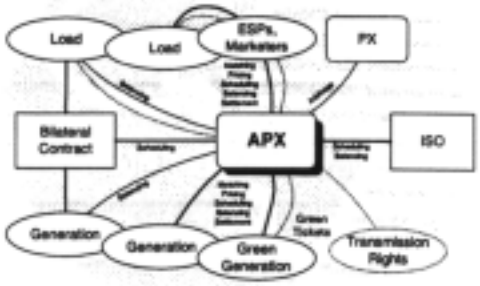
Today's Electric "Market"



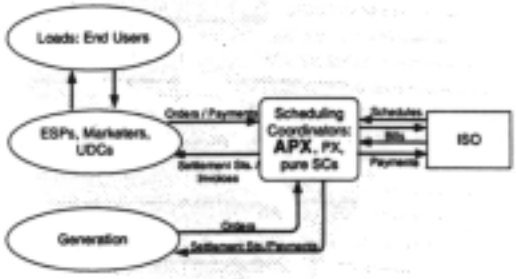
Electric Market of the Future



APX Products



New California Market Structure



APX Green Power Market

- APX operates the only exclusively "green" market
- Only 100% green, CEC registered renewable resource
- APX is a member of the green-e branding program and provides a market for 100% renewable resources only
- Generators sell green power and receive market-determined green premium above brown price
- Marketers/Wholesalers/ESPs/Utilities purchase desired quantity of green power
- Green premium set by Green Market supply and demand

Automated Power Exchange (APX)
Green Power Market

™

100% Renewable Electricity

Automated Power Exchange (APX) provides a market for renewable energy through the APX Green Power Market™. Renewable energy producers are matched with Electric Service Providers (ESPs) that want to provide "green" power to their customers.

Suppliers that wish to sell into the APX Green Power Market must be registered with the California Energy Commission as certified "Renewable Suppliers". Only energy provided from wind, solar, geothermal, biomass, landfill gas and small (less than 30 MW) hydro power plants may be sold into the APX Green Power Market™.

The APX Green Power Market provides a diversified portfolio of renewable energy supplies for ESPs, marketers and aggregators. Renewable energy producers can sell to a larger number of buyers that are willing to pay a premium price for energy from environmentally preferred resources. Project developers have a reliable market indicator that can be used to make investment decisions for new renewable energy supply projects.

Questions & Answers About the APX Green Power Market™

Q: What can I expect prices to be like in the APX Green Power Market?

A: The premium buyers place on energy from the APX Green Power Market will be determined by supply and demand. If there is a large demand for green power from environmentally conscious consumers, the premium could be substantial.

Prices in the APX Green Power Market will represent the price buyers are willing to pay for in-state renewable resources. Surveys indicate consumers are willing to pay a premium for power from renewable sources. However, APX cannot forecast what the price for power will be in any of its markets.

Q: I'm a homeowner. How can I buy green power through the APX Green Power Market™?

A: APX can provide you with the names of Electric Service Providers that offer a green power product to their end-use customers.

Q: How can I participate in the APX Green Power Market if I already have a supply contract with an investor-owned utility company for the output from my green power plant?

A: You have two options:

1 - Continue to operate under your existing contract with the utility company. Subject to reaching agreement with the utility, you may also be able to sell amounts in excess of your contract into the APX Green Power Market.

2 - Negotiate a buyout of your utility contract and sell the output from your plant through the APX Green Power Market. There are a number of consultants in California that can provide advice and assistance.

Q: I don't have a utility contract. How can I sell my green power through the APX Green Power Market?

A: APX provide the computer software you need to sell output from your plant directly to ESPs that are offering green power to their end-use customers. APX can also act as your Scheduling Coordinator to schedule power deliveries with the California Independent System Operator (ISO) and provide settlement services to assure payment.

Q: I run a manufacturing plant and am working with a power marketer for purchasing my power. But I want to have some of my power from green sources. How can APX help me?

A: Contact APX and let us know who your power marketer is. We work with your staff and theirs so that purchasing some of your electricity from the APX Green Power Market is easy.

Q: Can you tell me more about APX?

A: APX was founded in 1996 by professionals with decades of experience in the electric power business, advanced software technology, and powerful decision analysis techniques. APX also offers the APX Electricity Market for conventional energy sources, matching buyers and sellers automatically and anonymously in an efficient, state-of-the-art, electronic marketplace.

Contact:
Jan Pepper
Automated Power Exchange
10455 Bandley Drive
Cupertino, CA 95014
Phone: 408-517-2105 Fax: 408-517-2985
e-mail: pepper@energy-exchange.com
www.energy-exchange.com

What The Market Needs

Presented by:
Janel Guerrero, Enron Corp.
On Behalf of:
The Renewable Energy Alliance
June 25, 1998

The Renewable Energy Alliance

A national group of wholesale and retail power marketers working to build demand for renewable energy resources

- AllEnergy
- Edison Source
- Enron Corp.
- Foresight Energy Company
- Green Mountain Energy Resources
- PacifiCorp
- PG&E Energy Services

Overview

- REA Principles
- California
- PECO Settlement
- Conclusion

REA Principles

- Choice for all consumers
- Unbundling of revenue cycle services
- Meaningful affiliate standards
- No artificial barriers to entry
- Shopping credit
- Customer education
- Reasonable, uniform protocols for disclosure

California - The Good Stuff

- First state to open the market - Must be commended for taking the first step.
- Entire Market Open to Competition - All classes of customers were given the right to choose their supplier immediately (no phase-in).
- Competitive Metering & Billing - Allows supplier (ESP) to meter a customer's load, and provide billing services. (Industrial/Commercial immediately, one-year delay for residential).

The Good Stuff - cont.

- Generation Divestiture - PUC structured incentives to have utilities divest fossil generation.
- Affiliate Rules - PUC established reasonable standards of conduct.

Problems With The California Model

- Rate Cut - Mandatory 10% rate cut for residential and small customers reduces their interest in market offerings.
- CTC Recovery Structure - Calculation of the CTC as the residual between the Power Exchange and historic tariff rates makes it impossible for suppliers to add price value for smaller consumers. Larger consumers see value through long-term, innovative offerings.

Pennsylvania - The PECO Settlement

- Shopping Credit - Allows suppliers to provide a guaranteed savings on the commodity portion of the electric bill (above an 8% savings mandated through the Settlement). CTC collection is fixed in terms of amount and duration, allowing for a "known" CTC rate.
- Unbundled Metering & Billing - Better than in California because (1) consumers receive credit for 60% of the embedded cost, and (2) collection risk falls fully on the billing agent.

PECO - cont.

- Affiliate Rules - Settlement expanded the PUC's order by (a) restricting joint marketing, (b) conditioning the use of PECO's name and logo, (c) requiring a compliance filing, and (d) denying any advantage for PECO's retail affiliates based on deregulating generating assets.

PECO - cont.

- Competitive Bid Group - In 2001, at least 20% of consumers will become part of a competitive bid group whereby suppliers can compete to win the right to serve "default" consumers for a certain period of time.

PECO - Problems

- No divestiture - There is no requirement to divest generation, so market power issues are not fully remedied, although PECO Settlement provides for GENCO Code of Conduct.

- Phase-in Requirement - While the phase-in has been expedited, the PECO Settlement does not open the market to all immediately (66% on 1/2/1999, and 100% on 1/2/2000.

Problems - cont.

- No Standardization - The PECO Settlement has no precedential value as regards the other Pennsylvania utilities. Bifurcates the marketplace, increasing the cost of entering the Pennsylvania market.

Conclusion

- Inadequate rules kill competition.

- Without competition, efforts to develop a renewable industry and establish disclosure protocols are meaningless.

- Consumers need to understand what we're doing, and the transition has to be manageable.

Putting a Consumer Face on

Green Power

(Who are these people and what are they buying?)

Burk Kalweit

UNDERSTANDING ENERGY MARKETS

Green Power

Why do people pay more for something that does the same thing?

Brand Image

Quality/Reliability

"Save the Earth"

UNDERSTANDING ENERGY MARKETS

Green Power

"We give customers the ability to align their behaviors with their values."

Kevin W. Hartley (KWH)
Green Mountain Energy

UNDERSTANDING ENERGY MARKETS

Green Power

Concerns are real

Credible opportunities are all around us

- Sierra Club, EDF, others
- recycle
- car pool
- get active in local affairs
- others?

Easy, cheap opportunities are rare

Green Powe - real, tangible in some programs, inexpensive, easy

UNDERSTANDING ENERGY MARKETS

Green Market

New Product Introductions	Expenditures
+ 0.5 % in 1985 + 13.4 % in 1991	+ $110 Billion in 1992 + $150 Billion in 1997

Green Mountain Energy - $170 million in revenues expected for 1998

Expect to reach 3-5% of the total electricity market within 5-10 years

Lawrence Berkely Labs estimates 10% residential and commercial switch to Green (>10% non-hydro renewable)

UNDERSTANDING ENERGY MARKETS

Who buys Green?

[redacted]

Roper Starch - semi-annual survey of buying patterns

Segments they identify are:

True blue greens - 14% in 1993 up from 11% in 1990

Greenback Greens - 6% in 1993 down from 11% in 1990 - claim to be true blues but don't act the part

Sprouts - 35% up from 26% in 1990 - name implies type, concerned but not yet spurred to action

UNDERSTANDING ENERGY MARKETS

Who buys Green?

Roper Starch - semi-annual survey of buying patterns

Segments they identify are:

Grousers - 13% down from 28% in 1990 -
low on concerns and actions

Basic Browns - 32% up from 28% in 1990 -
"don't buy it" and don't buy it

UNDERSTANDING ENERGY MARKETS

EPRI Segmentations Developed from 1997 Research

Based on perceptions of Green sources, attitudes to environmental issues and reported environmental behaviors - e.g.

80% of consumers believe we have a serious responsibility to preserve the environment for future generations

50% are proud of the fact that they consistently act in "earth friendly ways"

80% of consumers recycle in their households

18% buy Green in the super market in spite of higher prices

UNDERSTANDING ENERGY MARKETS

EPRI Segments Identified

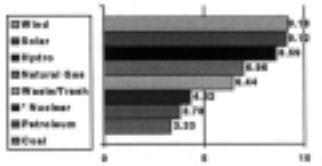
Radical Greens - 4%
Alarmists - 11%
Any Green - 11%
Parochials - 10%
Bottom Liners - 27%
Don't Cares - 37%

UNDERSTANDING ENERGY MARKETS

"Green-ness" Varies by Source

- safe
- efficient
- renewable
- non-polluting
- non-dangerous

How Green is it?



UNDERSTANDING ENERGY MARKETS

Segment Characteristics - Don't Cares - 37% of population

Source Preference - "Don't care" about source - all fine with me, accept anything that's reasonable.

Source Drivers - Not my problem

Willing to be moved - can be persuaded but expect someone else to lead the way

Key Identifiers - tend to be younger

UNDERSTANDING ENERGY MARKETS

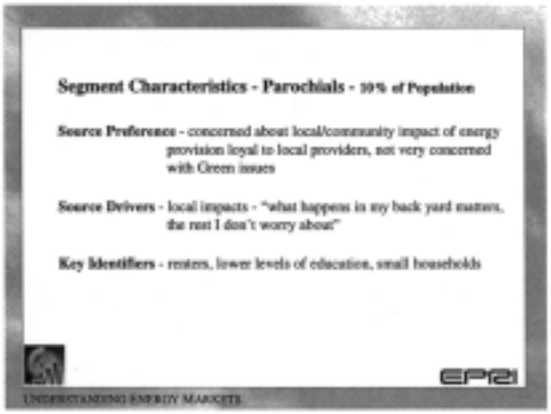
Segment Characteristics - Bottom Liners - 27% of Population

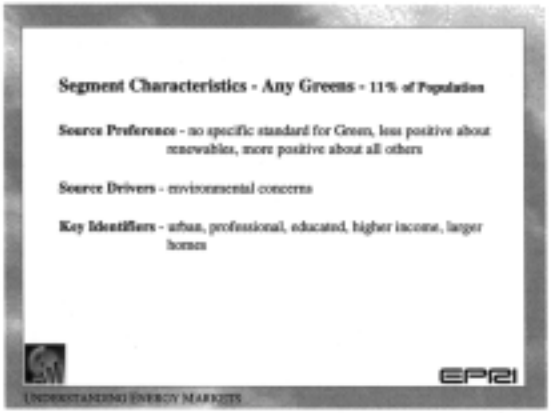
Source Preference - Believe efficiency and productivity are important - like hydro, natural gas, "clean" coal. Concerned about robustness and reliability of solar, wind, and geothermal. Concerned about expense of new technologies.

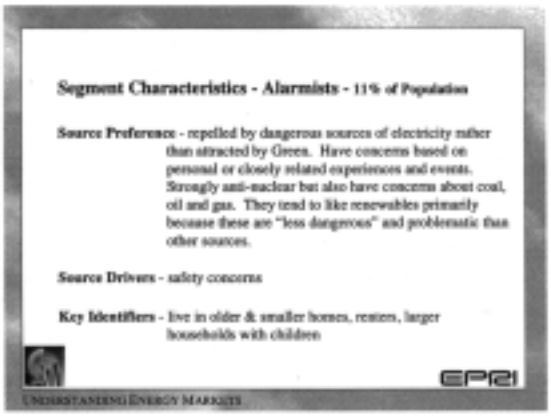
Source Drivers - efficiency, productivit

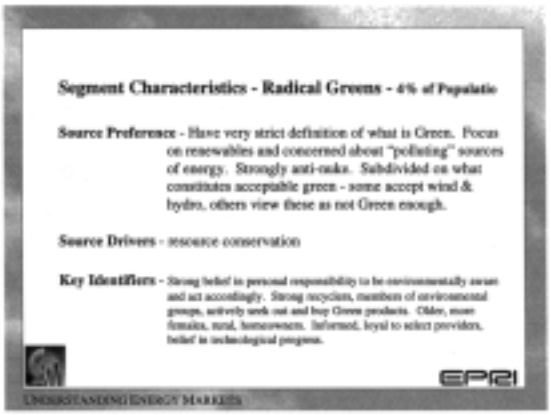
Key Identifiers - No discerning demographic characteristics

UNDERSTANDING ENERGY MARKETS

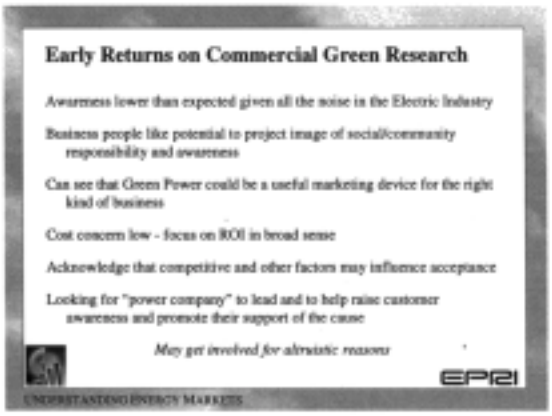

Segment Characteristics - Parochials - 10% of Population
Source Preference - concerned about local/community impact of energy provision loyal to local providers, not very concerned with Green issues
Source Drivers - local impacts - "what happens in my back yard matters, the rest I don't worry about"
Key Identifiers - renters, lower levels of education, small households
EPRI
UNDERSTANDING ENERGY MARKETS

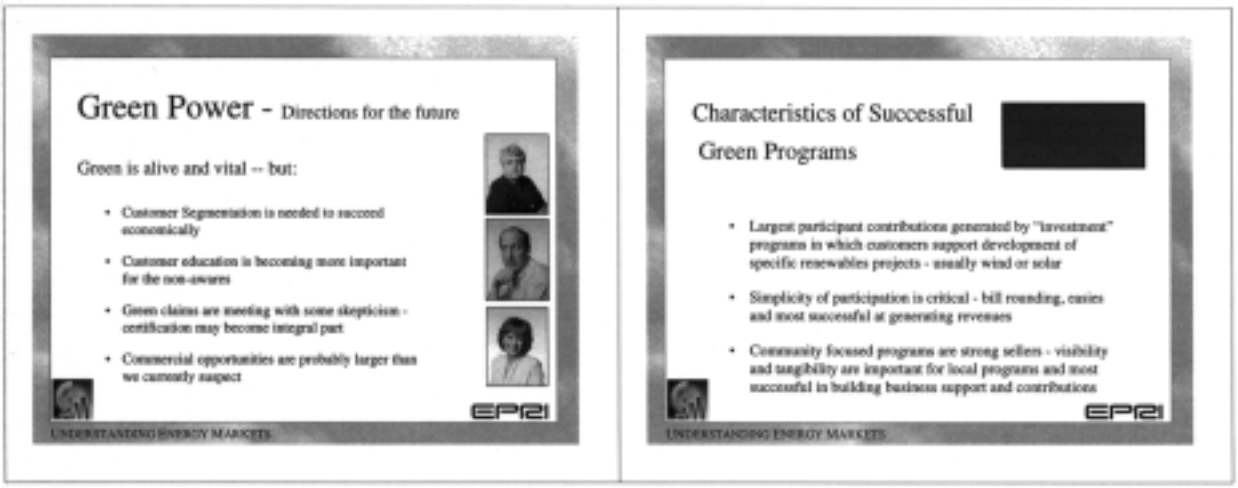

Segment Characteristics - Any Greens - 11% of Population
Source Preference - no specific standard for Green, less positive about renewables, more positive about all others
Source Drivers - environmental concerns
Key Identifiers - urban, professional, educated, higher income, larger homes
EPRI
UNDERSTANDING ENERGY MARKETS


Segment Characteristics - Alarmists - 11% of Population
Source Preference - repelled by dangerous sources of electricity rather than attracted by Green. Have concerns based on personal or closely related experiences and events. Strongly anti-nuclear but also have concerns about coal, oil and gas. They tend to like renewables primarily because these are "less dangerous" and problematic than other sources.
Source Drivers - safety concerns
Key Identifiers - live in older & smaller homes, renters, larger households with children
EPRI
UNDERSTANDING ENERGY MARKETS


Segment Characteristics - Radical Greens - 4% of Populatio
Source Preference - Have very strict definition of what is Green. Focus on renewables and concerned about "polluting" sources of energy. Strongly anti-nuke. Subdivided on what constitutes acceptable green - some accept wind & hydro, others view these as not Green enough.
Source Drivers - resource conservation
Key Identifiers - Strong belief in personal responsibility to be environmentally aware and act accordingly. Strong recyclers, members of environmental groups, actively seek out and buy Green products. Older, more females, rural, homeowners. Informed, loyal to select providers, belief in technological progress.
EPRI
UNDERSTANDING ENERGY MARKETS


How do these People Respond to Green Offers?
Selection of Green over Discounted Non-Green Offer (% Choosing)
EPRI
UNDERSTANDING ENERGY MARKETS


Early Returns on Commercial Green Research
Awareness lower than expected given all the noise in the Electric Industry
Business people like potential to project image of social/community responsibility and awareness
Can see that Green Power could be a useful marketing device for the right kind of business
Cost concern low - focus on ROI in broad sense
Acknowledge that competitive and other factors may influence acceptance
Looking for "power company" to lead and to help raise customer awareness and promote their support of the cause
May get involved for altruistic reasons
EPRI
UNDERSTANDING ENERGY MARKETS


Green Power - Directions for the future
Green is alive and vital -- but:
• Customer Segmentation is needed to succeed economically
• Customer education is becoming more important for the non-owners
• Green claims are meeting with some skepticism - certification may become integral part
• Commercial opportunities are probably larger than we currently suspect
EPRI
UNDERSTANDING ENERGY MARKETS
Characteristics of Successful Green Programs
• Largest participant contributions generated by "investment" programs in which customers support development of specific renewables projects - usually wind or solar
• Simplicity of participation is critical - bill rounding, easies and most successful at generating revenues
• Community focused programs are strong sellers - visibility and tangibility are important for local programs and most successful in building business support and contributions
EPRI
UNDERSTANDING ENERGY MARKETS

THIRD NATIONAL GREEN POWER CONFERENCE
SACRAMENTO, CA
JUNE 25, 1998

Presented by:

Steven Kelly
Executive Director
Renewable Energy Marketing Board (REMB)

THE RENEWABLE ENERGY MARKETING BOARD (REMB)

A. What Is It?	**Non-Profit**
B. What Is Its Purpose?	**Promote "Generic" Renewables** **Foster "Switching"**
C. What Is It Doing?	**Renewable Energy Promotional Campaign (REPC)**

COMMERCIAL CUSTOMERS

WHY BUY RENEWABLE RESOURCES?

- **A. Hedge against gas price volatility**
- **B. Promote sales through environmental improvement**

WHAT DO COMMERCIAL CUSTOMERS WANT?

- **A. Green Energy; "Not Tupperware"**
- **B. Hassle-free Transaction**

HOW DO COMMERCIAL CUSTOMERS PROCURE "GREEN"?

- **A. Marketing Budget**
- **B. Trust Factor**

Selling Green Power in Competitive Markets: Making Environmental Marketing Claims

Mary Engle
Assistant Director
Division of Enforcement
Bureau of Consumer Protection
Federal Trade Commission
(202) 326-3161
mengle@ftc.gov

1

FTC Consumer Protection Jurisdiction

- Section 5 of the FTC Act prohibits unfair or deceptive acts or practices
  - includes false or misleading advertising claims
- Almost all marketers are covered

2

FTC Rules/Guides

- Gas mileage disclosures in automobile ads
- Care labels on clothing
- EnergyGuide on major household appliances
- APR (Annual Percentage Rate) in ads for consumer loans

3

FTC and state attorneys general have concurrent jurisdiction over most advertising claims

4

FTC Approach to Advertising

- FTC approaches ad claims from the standpoint of *reasonable consumers*
- An interpretation is reasonable if a significant percentage of consumers interpret the ad in that way
- An ad may be susceptible to more than one reasonable interpretation

5

Advertising Substantiation

- Advertisers are required to have substantiation for ***all*** reasonable interpretations
- Advertisers must be able to substantiate both express and implied claims
- Advertising claims must be substantiated at the time they are made

6

What Is Substantiation

- Advertisers must have a *reasonable basis* for making claims, including claims based on projected performance
  - A reasonable basis consists of competent and reliable evidence
- It may be easier to substantiate claims based on what has *already occurred*

7

FTC would require substantiation for disclosures regarding fuel mix and emissions, as well as for other advertising claims

- Reliable tracking mechanisms may be necessary for substantiation of fuel mix and emissions claims

8

Sellers marketing "green power" should comply with the FTC's Environmental Marketing Guides

9

Environmental Marketing Guides

("Green Guides")
16 C.F.R. Part 260

10

General Principles

- Qualifications and disclosures should be *clear and prominent*
- Claims should not be overstated
- Comparative claims should be clear about the basis for comparison

11

General Environmental Benefit Claims

- Can be vague and confusing to consumers
- Should be avoided or qualified, unless all express and implied claims can be substantiated
- Need to be qualified to clarify the specific attribute to which the general claim refers

12

Image Advertising

- Advertising generally conveying that a seller is an "environmentally friendly" company may create an impression in consumers' minds that the electricity it sells is "environmentally friendly."

13

Seals-Of-Approval

- A seal may imply to consumers that a product is generally *environmentally superior* to others
- Seals should be accompanied by information explaining the basis for the award
- Seals should have language limiting the superiority claim to the *particular product attribute(s)* that can be substantiated

14

Third-Party Certification

- Commission analyzes third-party certification claims just as it does other advertising -- to ensure the claims are truthful and substantiated
- Does not insulate an advertiser from Commission scrutiny
- Does not eliminate advertiser's obligation to ensure for itself that claims are truthful and substantiated

15

Uniform Universal Disclosures

- Will make it easier for consumers to comparison shop
- Require decisions as to:
  - which information should be disclosed
  - how information should be displayed
  - where information should be disclosed (in what kinds of ads? periodically in bills?)

16

www.ftc.gov

17

National Council On Competition And The Electric Industry:

Consumer Information Disclosure Project

David Moskovitz
The Regulatory Assistance Project
177 Water Street, Gardiner, ME 04345-2149 (rapmaine@aol.com)
Phone (207) 582-1135 Fax (207) 582-1176 Website: http://www.rapmaine.org

Disclosure and You

- Good News: Consumers want clean and green power
- Bad News: Consumers think their power is already clean and green
- Good News: Disclosure and labeling is an effective way of allowing consumers to get what they want

National Council Research

See http://www.rapmaine.org

- Consumer research
  - Focus groups - six states including CA, WA, and CO
  - Baseline survey of consumer knowledge, attitudes, and practices - 1300 person
  - Quantitative disclosure testing - mall intercept performance test 1000 person including CA
  - Tradable tag - mall intercept
- Policy and technical research
  - Tracking options
  - Price and other consumer protection
  - Confidentiality
  - New England project
  - Newspaper study

Electricity Facts

Generation Price

Average price (cents per kWh) for varying levels of use. Prices do not include regulated charges for delivery service.

Average Monthly Use	250 kWh	500 kWh	1000 kWh	2000 kWh
Average Generation Price	5¢	4.5¢	4¢	3.5¢

Your average price will vary according to when and how much electricity you use. See your most recent bill for your average monthly use and Terms of Service or your bill for the actual prices.

Contract

See your contract or Terms of Service for more information.

- **Minimum Length:** 2 Years
- **Price Changes:** Fixed over contract period

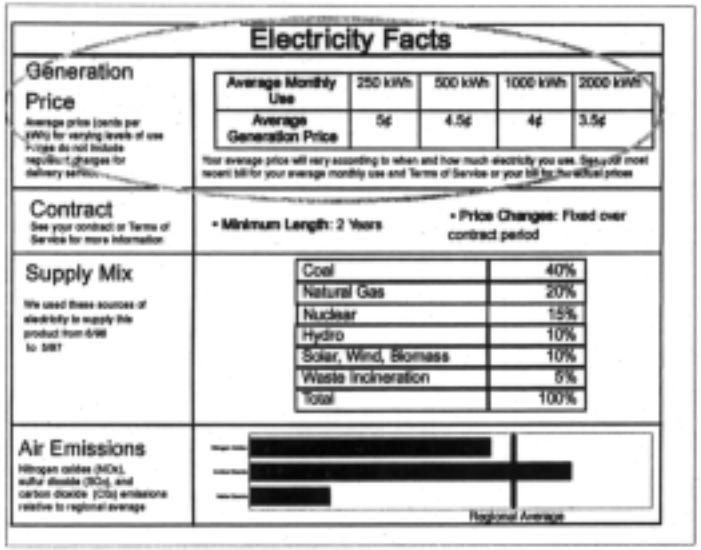
Supply Mix

We used these sources of electricity to supply this product from 6/96 to 5/97

Coal	40%
Natural Gas	20%
Nuclear	15%
Hydro	10%
Solar, Wind, Biomass	10%
Waste Incineration	5%
Total	100%

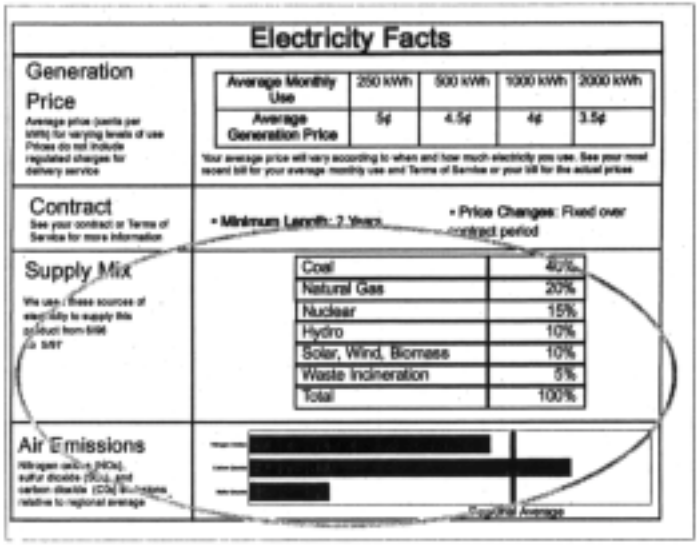
Air Emissions

Nitrogen oxides (NOx), sulfur dioxide (SO2), and carbon dioxide (CO2) emissions relative to regional average



Price

- Average Price per kWh
  - Don't use actual prices
- Three or four levels
  - Stops gaming, helps customers
- Bundled services
  - Stand alone price or combined price
- Seasonal, TOU rates, etc.
  - Average load profiles



Fuel Mix and Emissions

- Fuel mix
  - Keep it simple and uniform
  - Tables work better than pie charts
- Emissions
  - balanced need for information, data availability, and info overload
  - Bar charts worked fine
- Consumers balanced price, fuel mix, and emissions

Other Key Findings

- Uniformity
  - Performance suffered without uniformity
- Mandatory or voluntary
  - Voluntary doesn't work well for consumers
- Tracking system
  - There is a non-fatal consumer problem with tradable tags

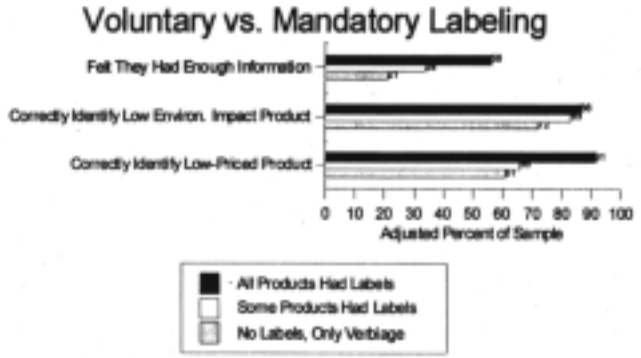
Other Topics

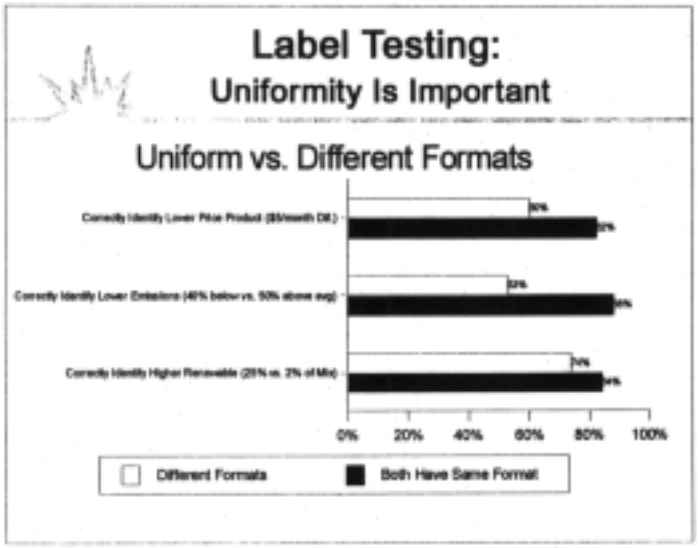
- Keep it simple
  - Historic annual averages
  - Annual emission factors
- Regional uniformity
  - Regional projects have gone well
- Default
  - Who can use it and what is it?
- Wide dissemination
  - All marketing materials incl. papers

Conclusion

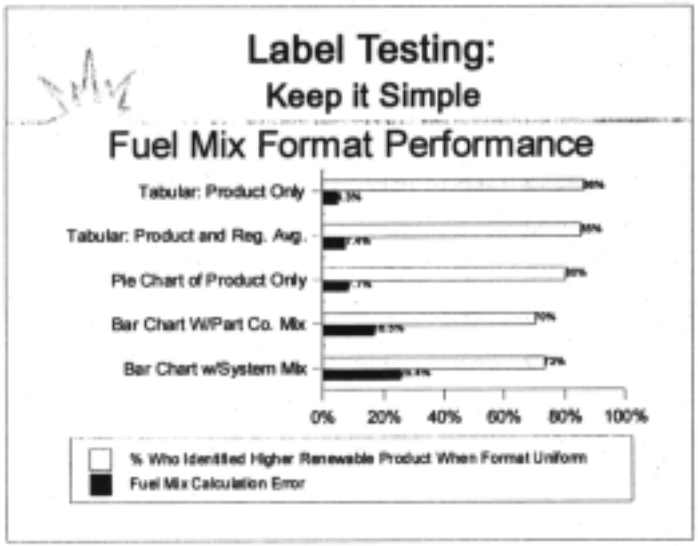
- Disclosure is important to green sellers
  - Consumers look to label more than certificate
- Disclosure is going fairly well
- Most important disclosure issue is that disclosure be mandatory (with or without default)

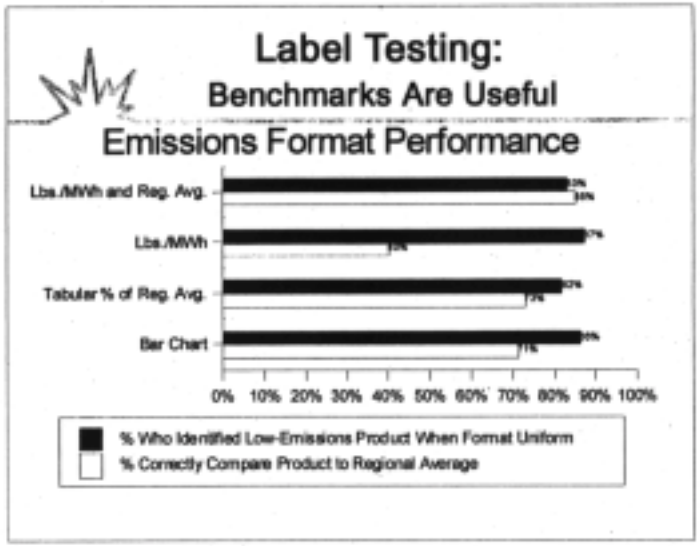
Label Testing:
Voluntary Labeling Doesn't Work



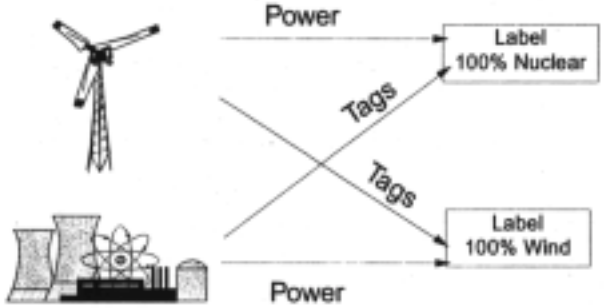

Label Testing:
Uniformity Is Important
Uniform vs. Different Formats
Correctly Identify Lower Price Product ($5/month Dif.)
Correctly Identify Lower Emissions (40% below vs. 50% above avg)
Correctly Identify Higher Renewable (25% vs. 2% of Mix)
0%
20%
40%
60%
80%
100%
Different Formats
Both Have Same Format


Label Testing:
Effective Prices Are Needed
Price Format Performance
Block Rates only
Flat Fee + Usage Rate
Avg. Monthly Use Rate
Block Rate & Avg. Monthly Bill
Average Total Monthly Bill
0
20
40
60
80
100
Seconds Used to Complete Calculations
% Who Identified Low-price Product When Format Uniform
% Error in Calculating Average Monthly Bill

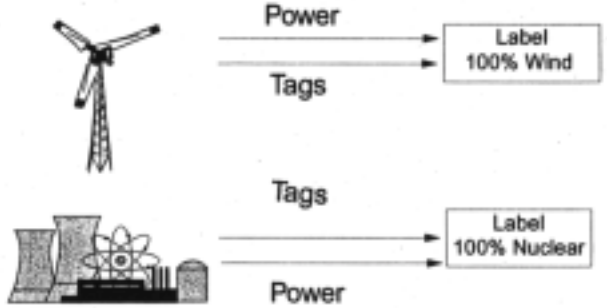

Label Testing:
Keep it Simple
Fuel Mix Format Performance
Tabular: Product Only
Tabular: Product and Reg. Avg.
Pie Chart of Product Only
Bar Chart W/Part Co. Mix
Bar Chart w/System Mix
0%
20%
40%
60%
80%
100%
% Who Identified Higher Renewable Product When Format Uniform
Fuel Mix Calculation Error


Label Testing:
Benchmarks Are Useful
Emissions Format Performance
Lbs./MWh and Reg. Avg.
Lbs./MWh
Tabular % of Reg. Avg.
Bar Chart
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
% Who Identified Low-Emissions Product When Format Uniform
% Correctly Compare Product to Regional Average

Tag Example



Contract Example



Tag Study

- Mall intercept in two cities
- Consumers shown products and asked a series of questions
- Tradable tags explained to half, contract approach to other half. Questions repeated
- End with a few targeted question

Study Conclusions

- Not good news for tags
- More consumers changed choice, usually away from green option, with tag approach
- Consumer confidence in label drops more with tag approach
- Consumers had less understanding of tag approach
  - This explains some of other differences

Study Conclusions

- Tag group asked whether they would prefer tags an power coming from same plant
  - 75% prefer (41% strongly prefer)
- Contract group asked whether approach could be made less expensive but less precise
  - 78% said no

More Conclusions

- Either approach can be used but cost and flexibility benefits of tags must be significant
- Regional uniformity is important
- If tag approach is used
  - Limit trading to regional market
  - Be sure all stakeholders are on board
  - Be prepared if tracking approach becomes an issue

New England Disclosure Project

- Cooperative effort of six PUCs to achieve uniformity
- Unprecedented results
- Agreed upon Model Rule
- Uniform basis for label with some state-by-state variation
- Uniform regional tracking
- Individual state proceedings now underway

Regional Uniformity

- Uniform tracking is essential
  - If one state uses tradable tags and another uses contracts double counts will occur
- Helps customers and suppliers
  - Multiple requirements are costly for suppliers
  - Standardized labels add to ease of use and credibility
- Opportunity to shape federal requirements

EPRI

Renewable Energy Technologies: Status and Perspective

Ed DeMeo
Manager, Renewables
EPRI

Third National Green Power Conference June 25-26, 1998

DVB-984 Page 1

Technologies and Basis

- Biomass
- Geothermal
- Photovoltaics
- Solar Thermal
- Wind

Renewable Energy Technology Characterizations

a Joint Project of DOE and EPRI

EPRI Report TR-109496, December 1997

AVAILABLE FROM EPRI DISTRIBUTION CENTER (510) 934-4212

DVB-984 Page 2

Biomass

- Several biomass power options commercially available today
  - Direct combustion: industrial cogeneration well-established, some utility plants
  - Cofiring with coal: emerging from demonstration stage
  - Landfill gas: well established in municipalities

Biomass (continued)

- Biomass power can be a zero net producer of carbon emissions
- Landfill gas combustion for power reduces greenhouse-gas impact by 95%
- Emerging biomass gasification technologies likely to improve efficiency, economics and environmental attractiveness

Geothermal

- Hydrothermal/flash steam commercial since the 1960s
- Hydrothermal/binary technology commercial since the 1980s
- Hydrothermal resources geographically localized
- Hot-dry-rock resources much more widespread, but technology in research and development stage

Photovoltaics

- Preferred technology for many grid-isolated situations
  - often cheaper than line extension
  - power for developing countries without widespread grid
- Growth in rooftop and building-integrated systems
  - popular appeal -- economics secondary
  - building facades -- energy production secondary
  - requires subsidy and/or special customers
- Very appealing to "green" customers
  - no fuel, silent, modular

Photovoltaics (continued)

- Several times too costly to compete with grid power on economic basis
  - but retail, not wholesale, competition
- Newer PV technologies promise lower costs
  - but robust market for current products keeps prices up
- Significant environmental benefit requires gigawatts of PV
  - 10 to 20 years before PV economics will allow this

Solar Thermal

- Three configurations: trough, tower, and dish
  - require high-quality, direct solar resources
- Trough achieved commercial status in late 1980s as gas hybrid
  - 350 MW in Southern California
  - system costs approached floor
  - can't compete with today's wholesale power costs
  - equipment supplier infrastructure dormant
  - could readily serve markets at 12 to 15 ¢/kWh

Solar Thermal (continued)

- Tower and dish systems in engineering development stage
  - 10 MW tower under test at Solar Two
  - integral thermal storage allows dispatchability for tower
  - dish-system field evaluations in construction
  - dish offers 20 to 30 kW modular building block
  - reliable operation over extended periods is major technical issue for both
- Tower commercialization next steps require large investments
  - tens to hundreds of MW
  - hundreds of millions of dollars
  - unlikely in today's climate
- Dish prospects dependent on engine commercialization for a non-solar use
  - vehicle power or modular on-site distributed generation

Wind

- World's fastest growing electric power technology
  - over 7000 MW worldwide; 20% growth rate
  - most activity in Europe
  - commercial status achieved
- Credible estimates predict some 30,000 - 40,000 MW of new wind power by 2010

Wind (continued)

- Denmark now gets 7% of its electricity from wind
  - reliability increasing through growth of short-term prediction capability
- Wind competes with wholesale power costs in some cases
  - Europe -- higher conventional energy costs
  - still difficult in U.S.
- Some 500 new MW in U.S. over 1998-1999
  - driven largely by scheduled expiration of Production Tax Credit

DVB-964 Page 11

Renewable Power Options: Status Summary

	Research	Engineering	Pre-Commercial Demo	Early Commercial	Commercial
Biopower					
• Direct Combustion					X
• Landfill Gas					X
• Cofiring				X	
• Gasification		X			
Geothermal					
• Hydrothermal					X
• Hot Dry Rock	X				
Wind					
• Grid-Independent					X
• Utility-Scale					X
Photovoltaics					
• Grid-Independent					X
• Residential and Building-Integrated			X		
• Utility-Scale	X	X			
Solar Thermal					
• Trough				X	
• Tower		X			
• Dish		X			

DVB-964 Page 12

Renewable Green Power Available Now

- Wind
  - economical power and zero carbon emissions
- Biomass cofiring
  - low-cost carbon (and other) emissions reduction
- Biomass direct combustion
- Landfill gas
  - substantial greenhouse gas advantage
- Building-integrated or distributed PV
  - high public appeal but relatively few kWh
  - significant greenhouse gas reduction 10+ years from now
  - one million roofs less than U.S. installed wind today

Renewable Technology Program

California Energy Commission

(Marwan Masri)

Background

- AB 1890 provided for $540 million to be collected from investor-owned utilities to support existing, new and emerging in-state renewable resource technologies
- SB 90 codified Energy Commission *Policy Report on AB 1890 Renewables Funding* outlining recommended allocation and distribution mechanisms for funding

California Energy Commission, June 26, 1998

Renewable Technology Program Funding Allocation

California Energy Commission, June 26, 1998

Existing Technologies Account

- Distributes $243 million collected over four years
- Supports renewable plants operational prior to September 26, 1996
- Monthly payments for renewable generation

California Energy Commission, June 26, 1998

Existing Technologies Account

- 273 facilities registered as renewable suppliers
- 173 of those facilities are eligible for funding, with a total of 2,750 MW of capacity
- Payments of $10.5 million made to existing facilities for renewable generation from January through April 1998

California Energy Commission, June 26, 1998

New Technologies Account

- Distributes $162 million collected over four years
- Supports new renewables and repowers that come on-line between Sept. 26, 1996 and 2002
- Auction conducted June 5, 1998 to solicit bids for subsidy - received 56 bids
- Results of auction to be announced first week of July

California Energy Commission, June 26, 1998

Emerging Technologies Account

- Distributes $54 million collected over four years
- Supports small distributed generation offsetting customer's electrical needs
- Competitive barrier for these technologies is economies of scale
- Buydown program began March 20, 1998
- Funds divided into 5 blocks with decreasing incentives in each block

California Energy Commission, June 26, 1998

Emerging Technologies Account

- 81 buydown reservation requests received to date
- $4.3 million of first $10.5 million block reserved
  - 4% reserved for small systems (10 kW or less)
  - 15% reserved for medium systems (10 kW to 100 kW)
  - 24% reserved for large systems (over 100kW)
- First actual payments for installed systems have been made ($16K)

Customer Credit Subaccount

- Distributes $75.6 million collected over four years
- Up to 1.5 cents/kWh paid to consumers for eligible purchases
- Administrative costs reduced by distributing funding to energy service providers that must show credit to consumers
- Offsets added cost to consumers from choosing renewable power

Customer Credit Subaccount

- 10 marketers have registered as renewable providers offering 24 products containing a percentage of renewable energy
- No requests for customer credits yet because of delay in direct access market start-up

Consumer Education Subaccount

- $5.4 million collected over four years
- Information gathering workshop conducted June 3, 1998

Green-Pricing Scorecard

Terry Peterson
(650) 855-2594 [-8759 fax]
TPeterson@epri.com

Second National Green Power Marketing Conference, Sacramento CA

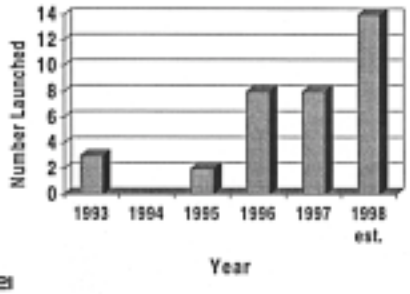
June 25-26, 1998

Early-Adopter Green-Pricing States

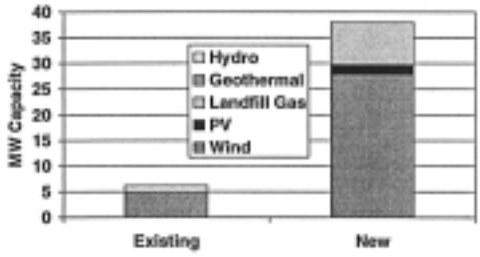
Green-Pricing Utilities

APS	PSCo	IPALCo	LES	Austin	ClarkPU
SMUD	Tallah.	DECo	NPC	EPEC	
Aspen	FEES	TCL&P	NYSEG	HL&P	
CSU	FP&L	DE/CP	BPA	MG&E	
FCL&P	GRU	NSP	PGE	WEPCo	
HCEA	HECO	UPA	CSWS	WPS	

Green-Pricing Program Growth



New vs Existing Resources



What's the Score?

- 35 → 50+ "programs" in place or planned (depending upon how counted)
- Programs in 15 states, spreading to others
- Programs distributed throughout U.S. — correlated with resource more than electricity price (or rate of deregulation)
- Experience predicts early program adoption by relatively few (~1%) ratepayers, but…
- Difficult to gauge ultimate penetration

What Makes a Good Green Pricing Tariff?

Blair G. Swezey
National Renewable Energy Laboratory

Purpose

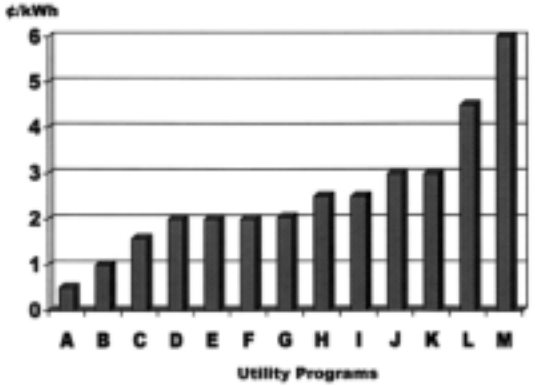
- Develop a primer for utilities, regulators and other interested parties, that:
  - Identifies and examines pricing sensitivities
  - Provides case study examples of utility tariff development based on regulatory filings and other available information

What is the Goal of a Green Pricing Program?

- Maximize Renewables Deployment?
- Maximize Customer Participation?
- Maximize Revenues and Profits?
- Gain Market Experience?
- Maximize Public Relations Benefits?

- Working Premise: the size of the premium impacts program "success"

Energy-Based Green Pricing Premiums



Premium Calculation

Premium =
project cost - avoided cost + other costs

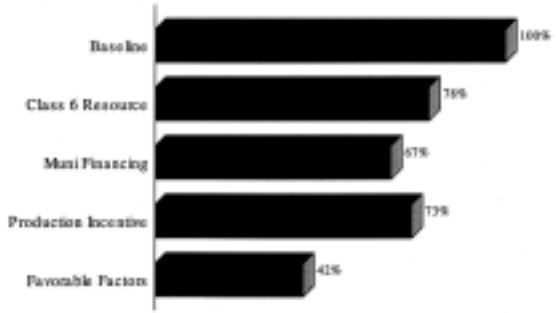
Project Cost Sensitivities

- Technology
- Resource Quality
- New vs. Existing Project
- Financial Variables
- Incentives
- Administration and Marketing
- Transmission
- Economies of Scale

Example: Wind Energy Project

- 20-MW wind project
- Class 4 wind resource
- IOU ownership and financial structure

Wind Cost Sensitivities



Aggregating Green Customers

Third National Green Power Conference

California

June 26, 1998

Steven M. Rothstein, President
Environmental Futures, Inc.
(617) 443-1300

Environmental Futures

Overview of Today's Presentation

- ✧ Massachusetts Pilot Program
- ✧ Legislative Highlights
- ✧ Benefits of Aggregation
- ✧ National Energy Choice's Aggregation Offer
- ✧ Current Green Options
- ✧ Issues for Consideration

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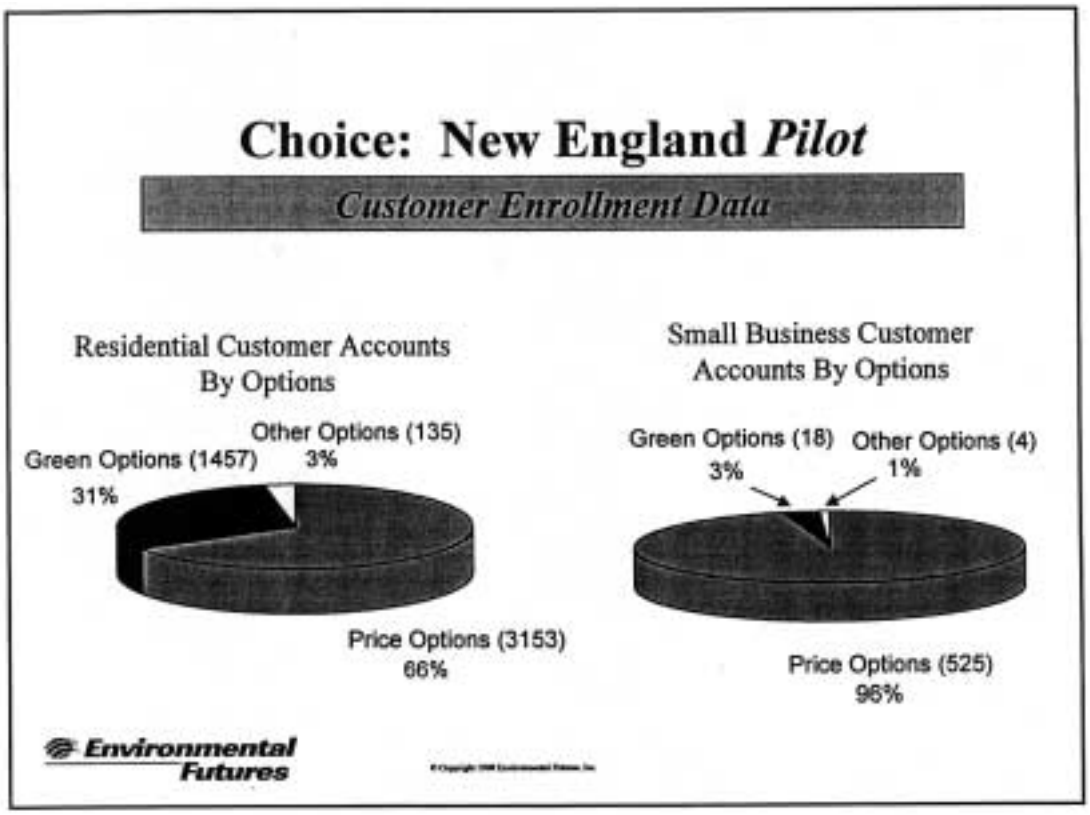
Choice: New England Pilot
Customer Enrollment Data
Residential Customer Accounts By Options
Other Options (135) 3%
Green Options (1457) 31%
Price Options (3153) 66%
Small Business Customer Accounts By Options
Green Options (18) 3%
Other Options (4) 1%
Price Options (525) 96%
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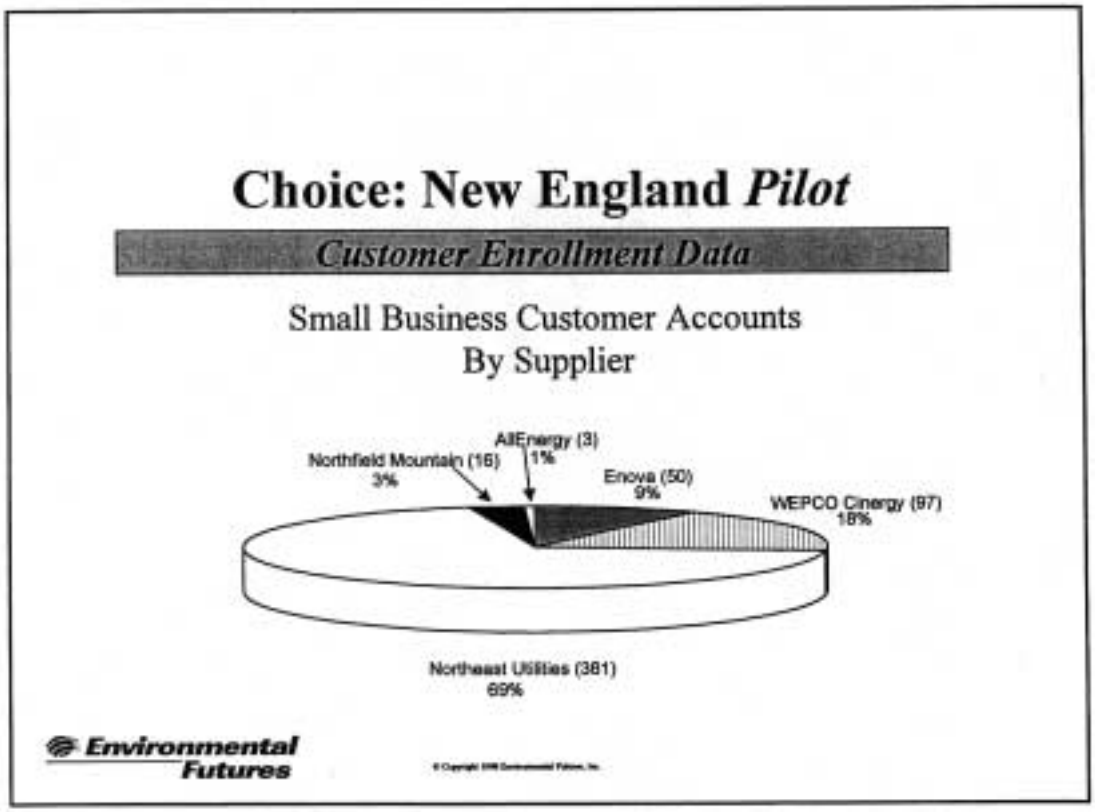
Choice: New England Pilot
Customer Enrollment Data
Small Business Customer Accounts By Supplier
AllEnergy (3) 1%
Northfield Mountain (16) 3%
Enova (50) 9%
WEPCO Cinergy (97) 18%
Northeast Utilities (381) 69%
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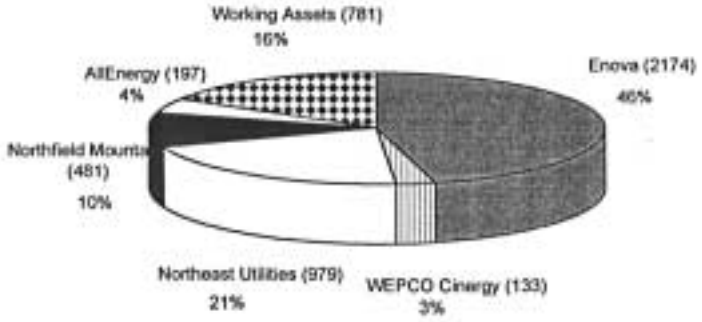
Choice: New England *Pilot*

Customer Enrollment Data

Residential Customer Accounts By Supplier



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Choice New England Pilot

Aggregation

- During the MECo Pilot, WEPCO, which offered a price option, aggregated customers through the Retailers Association of Massachusetts (RAM).
- WEPCO benefited from reduced transaction cost --- RAM provided a value-added service (one of the lowest prices) to its members and used the program to enroll new members.
- Aggregation was key element of WEPCO's marketing.

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Massachusetts Legislation Chap 164 of Acts of 1997

- As of March 1, 1998 electricity customers have choice of supplier

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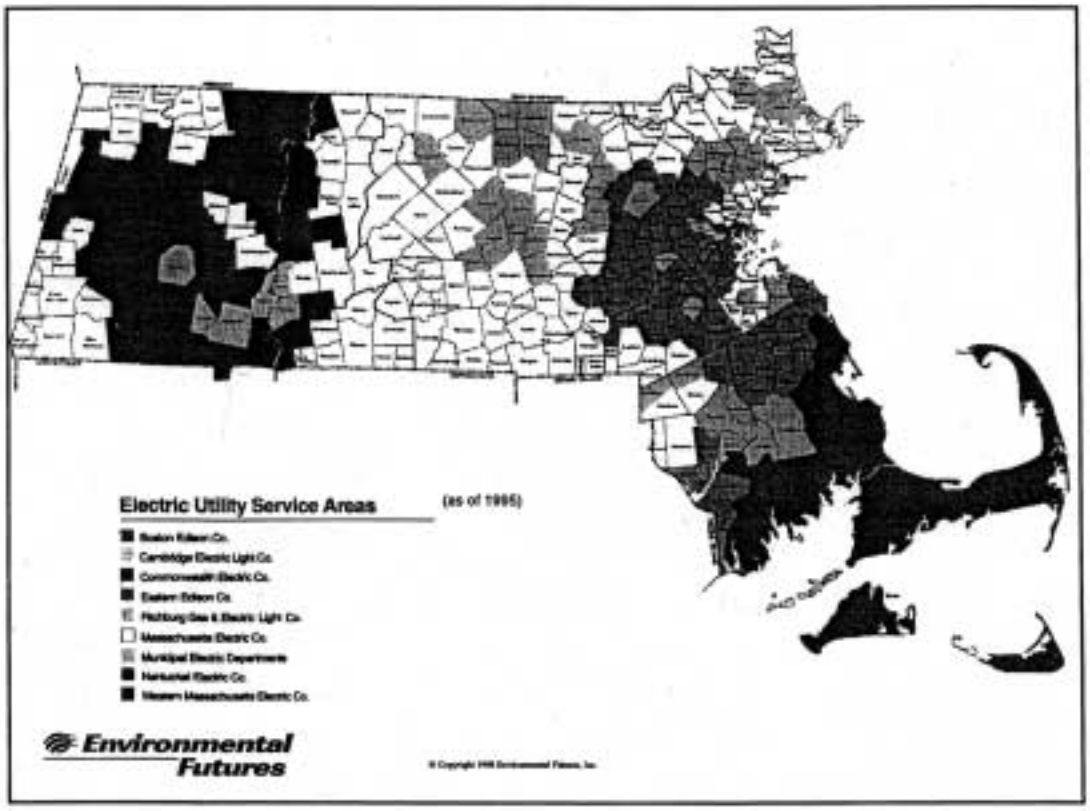

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Rhode Island
The Utility Restructuring Act of 1996

- As of January 1, 1998 electricity customers have choice of supplier

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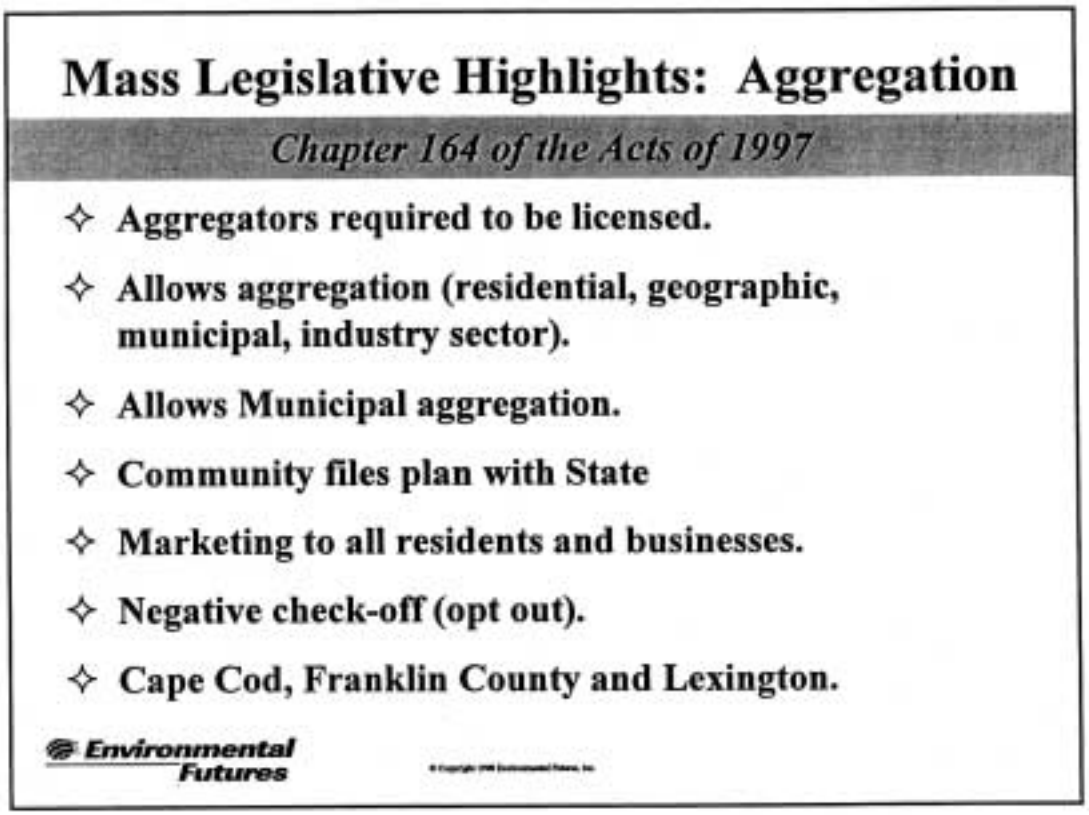

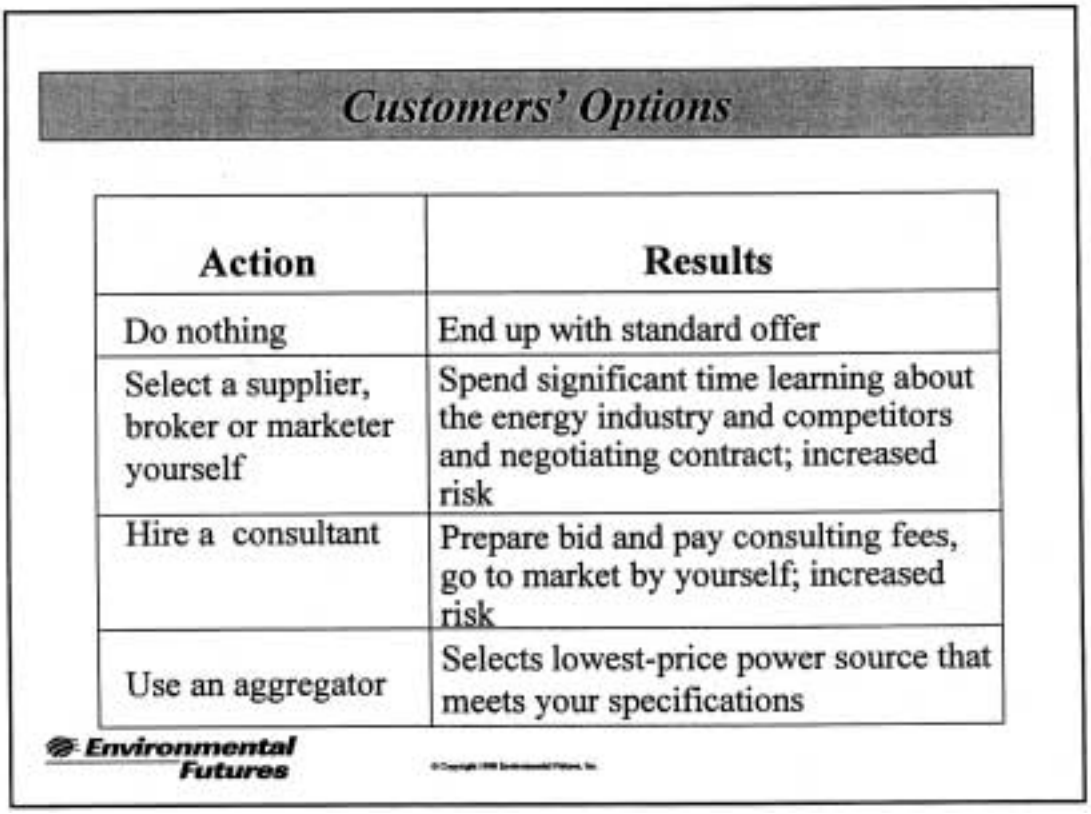

Action	Results
Do nothing	End up with standard offer
Select a supplier, broker or marketer yourself	Spend significant time learning about the energy industry and competitors and negotiating contract; increased risk
Hire a consultant	Prepare bid and pay consulting fees, go to market by yourself; increased risk
Use an aggregator	Selects lowest-price power source that meets your specifications

Aggregator (ăg' re-gā'tər)*n.*: is a buyer's agent who brings together individual electricity buyers to form a large pool. The aggregator's exclusive function and motivation is to provide reliable energy at the lowest cost.

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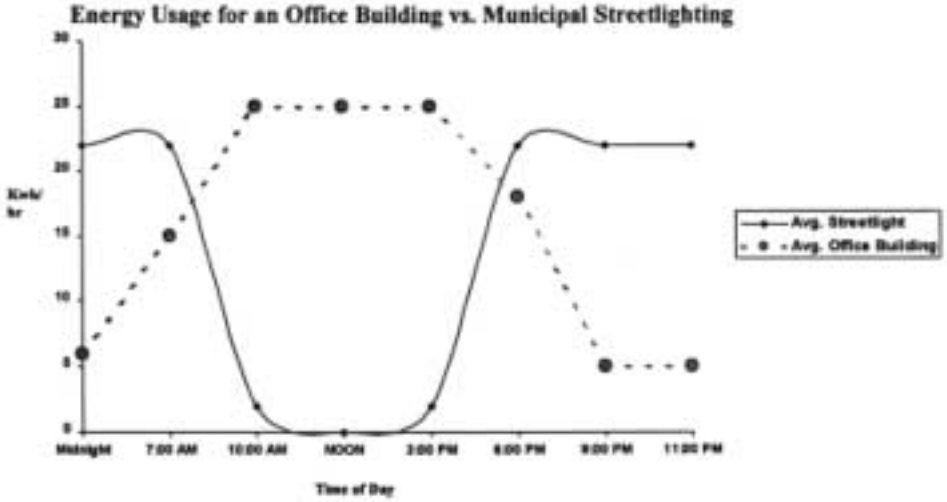
The Benefits of Aggregation



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Current Aggregators

- A few companies.
- Several consultants (one deal at a time).
- Organizations (i.e. HEFA)

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About NEChoice, LLC and the "National Energy Choice Program"

- National power aggregator focusing on commercial and industrial markets
- Buyer's broker: Represents the buyers' interests in the market
- NEChoice Business approach
  - *Work solely on behalf of customer*
  - *Not affiliated with any energy supplier, utility or marketer*
  - *Sole incentive is to secure lowest-price reliable energy supplier*
  - *No conflict of interest*

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NEChoice, LLC Customers

- Currently Over 400 Customers across the nation

  (including hotels, theatres, manufacturers, municipalities, manufacturers, retail chains and management properties)

- Associations include:
  - *Mass Municipal Association*
  - *Mass Extended Care Federation*
  - *New England Newspaper Association*
  - *California Association of Non-Profit Institutions*
  - *California Glass Association*
  - *California Rehabilitation Association*

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RFP Process (Jan - May 1998)

- Collected and analyzed customer bill and load data
- 600+ Suppliers contacted/ 140 RFPs mailed
- Bidders Conference
- Reviewed Proposals
- Selected and interviewed finalists
- Pre-negotiated supply contract & developed comprehensive energy savings program
- Submit recommended supply contract to customer

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Select Energy

- Select Energy is an affiliate of Northeast Utilities that operates in competitive market.
- Range of Services:
  - *Energy Services*
  - *Energy Efficiency Services*
  - *Power Quality Services*
  - *Process Optimization Services*
  - *Predictive Maintenance Services*

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The Boston Globe

FRIDAY, JUNE 19, 1998

Energy broker lines up deals

Contract is first payoff of utility deregulation

By Ronald Rosenberg
GLOBE STAFF

In the first payoff from the state's new utility deregulation law, a Boston buying cooperative is expected to announce today the first large contract for commercial and municipal users to buy electricity on the open market.

National Energy Choice LLC, acting as a broker, said it has letters of intent with several hundred users – businesses, nonprofit organizations, cities and towns in Massachusetts and Rhode Island – to purchase electricity from Select Energy, the unregulated subsidiary of Hartford-based Northeast Utilities, the largest utility in New England.

The users spend more than $200 million on electricity each year.

The program was made possible after Massachusetts handed utility deregulation to March. Before that, users had no choice except their local utility.

The National Energy Choice program would officially start in January 1999. It would be available initially to business and organizations, but not residential customers. There are plans to expand the program to residential customers after 2000, said Paul L. Barrett, a National Energy Choice managing director.

Customers who sign up for the four- or five-year program will pay about 5 percent less than what they pay utilities now, said Steven M. Rothstein, managing director of National Energy Choice, a company backed by Citizens Energy Corp.

"We think there will be even greater savings ahead," said Rothstein.

The agreement is similar to – but potentially larger than – an electricity purchase agreement between the Massachusetts Health and Educational Facilities Authority and PECO Energy Co. of Philadelphia.

National Energy Choice will formally begin signing up customers next week and will continue until the Sept. 30 deadline.

Users that have signed letters of intent include movie theaters, hotels, associations representing Massachusetts municipalities, nursing homes, and newspapers, along with 80 school districts in Rhode Island.

"We're very excited about the cost-saving opportunities for our members," said Geoffrey C. Beckwith, executive director of the Massachusetts Municipal Association, which represents more than 250 cities and towns, of which 200 have signed letters of intent for the energy discount program.

He said the communities that spend $500,000 per year on electricity, about 20 percent of that cost will be in electric generation. Users will save 5 percent on the electric generation portion. National Energy Choice will earn a monthly fee of 15 percent to 25 percent of the money saved, said Barrett.

However, Select Energy will make most of its money through energy audits and other services.

Customers can also earn an additional 5 to 7 percent if they pursue an optional energy efficiency program aimed at reducing electrical consumption.

For those savings, Select Energy will conduct an energy audit that would recommend improvements in heating, ventilation, and air conditioning systems. Customers could use Select Energy or other companies to perform the upgrades to qualify for the discount.

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OPTION 1: 4 Year Term

Electricity Savings

- 5% energy savings below Standard Offer in first 4 years
- Additional savings possible in the 4th year, market price is lower.

Energy Efficiency

- Additional 5% reduction below Standard Offer guaranteed annually

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OPTION 2: 5 Year Term

Electricity Savings

- 5% energy savings below Standard Offer in first 4 years
- 7% energy savings below Standard Offer in 5th year
- Additional savings possible in 4th and/or 5th year if market price is lower

Energy Efficiency

- 7% reduction off Standard Offer guaranteed for first 4 years

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OPTIONS 1 & 2 Overview

Minimum assured % savings below Standard Offer

	4 yr.	5 yr.
Supply	5%	5-7%
Energy Efficiency	5%	7%
Minimum Combined Savings	10%	12-14%

NEC fee is a share of the savings

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Energy Efficiency

Overview

- ✧Select will conduct energy survey
- ✧Identify electricity, natural gas, oil, water conservation opportunities
- ✧Sensitivity reduction in lighting/quality of life
- ✧5% minimum savings for 4 year program
- ✧7% minimum savings for 5 year program

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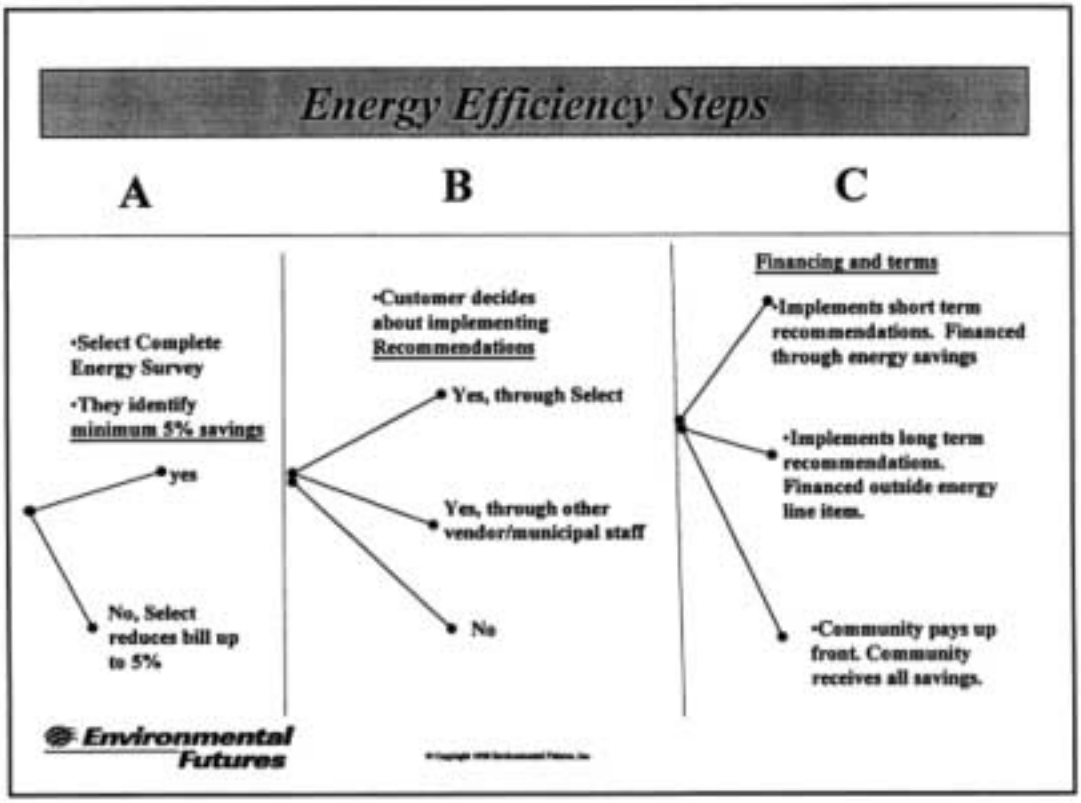
Energy Efficiency Steps
A
B
C
•Select Complete Energy Survey
•They identify minimum 5% savings
yes
No, Select reduces bill up to 5%
•Customer decides about implementing Recommendations
Yes, through Select
Yes, through other vender/municipal staff
No
Financing and terms
•Implements short term recommendations. Financed through energy savings
•Implements long term recommendations. Financed outside energy line item.
•Community pays up front. Community receives all savings.
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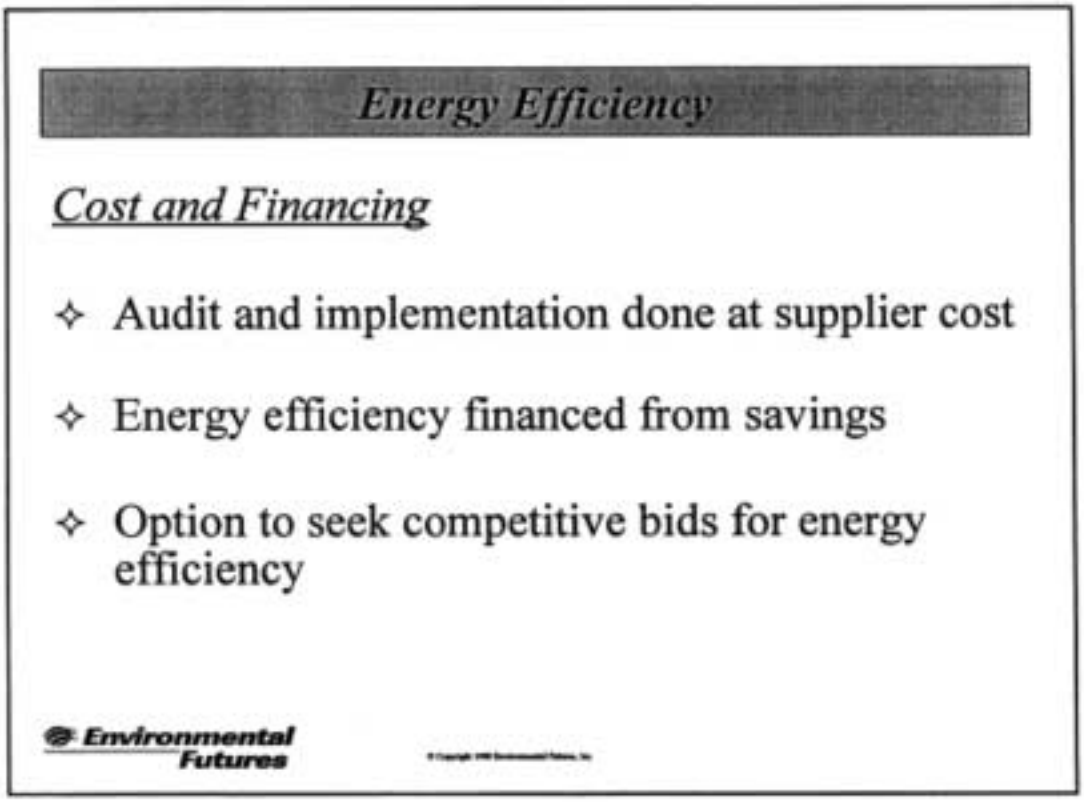
Energy Efficiency
Cost and Financing
✧ Audit and implementation done at supplier cost
✧ Energy efficiency financed from savings
✧ Option to seek competitive bids for energy efficiency
Environmental Futures

Savings Example

Example savings - large-sized customer

Annual electricity bill	**$1,000,000**
Standard offer savings (10%)	**900,000**
Commodity portion of bill (33%)	**300,000**
Commodity savings (5%)	**15,000**
Energy eff. Savings (min. 5%)	**15,000**
Minimum savings realized	**$30,000**

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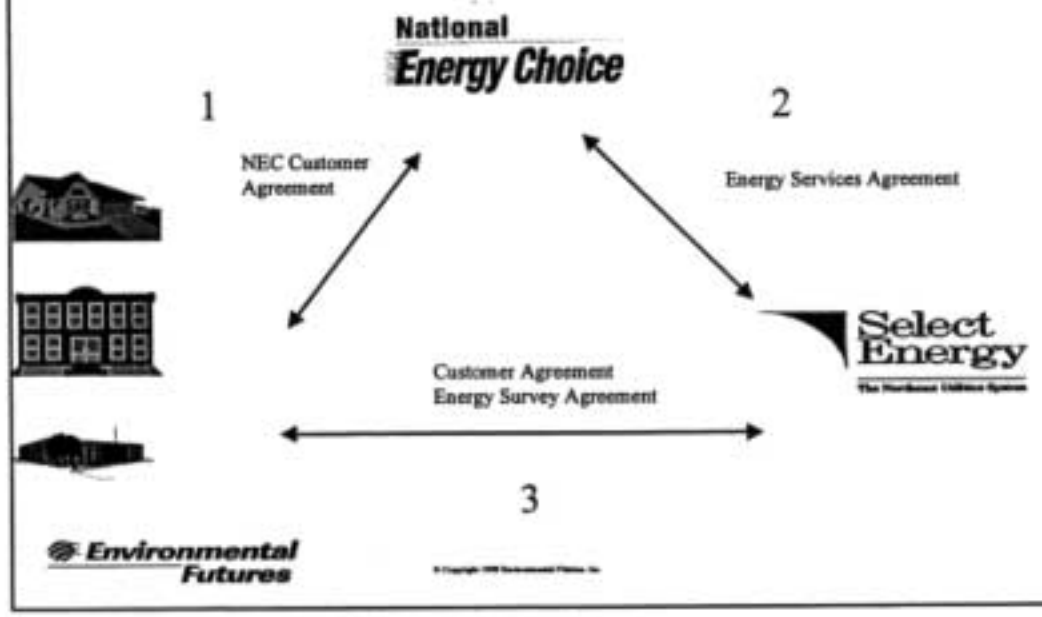
Flow of Agreements



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Massachusetts Green Power Marketing

- **AllEnergy**
  - *AllEnergy (Regen) is offering retail customers the chance to remain with existing utility or supplier and support renewable projects (landfill, gas, solar, wind) through an $8 per month premium.*
  - *Only green option currently available and one of only a few total options in MA.*

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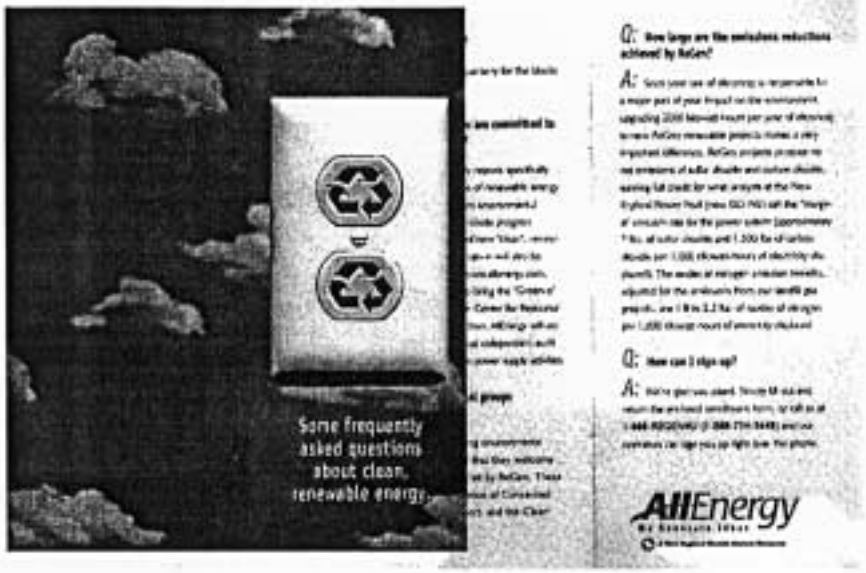

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Green Marketing

Massachusetts: Green Power Marketing

- **Sun Power Electric**
  - Part of Conservation Services Group, Inc., a non-profit energy services provider.
  - Sun Power is designed to own and build PV on rooftops, funded in part by contributions from participating members (membership costs $15 -$100).
  - Electricity generated will be sold to PV site hosts, utilities and suppliers. The Sun Power Electric brand name will be a green electric product which contains new PV supply sold to members either directly or through participating power marketers.

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Aggregating Green Customers

Issues for Consideration

- Suppliers seeking to compete based on price currently find it difficult to compete against the standard offer in CA and MA.
- Most marketers are avoiding residential market for now.
- Some residential retail marketers are taking a value-added approach.
- Aggregation is a key to offering value and savings.

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Aggregating Green Customers

Issues for Consideration (con't)

- Marketing to residential customers will increase as standard offer price (i.e. MA and CA) increases over next few years.
- Watch for convergence with other industries: i.e., natural gas, telecom, credit card, cable, internet.
- Energy efficiency load management information and power quality offers significant opportunities.

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The Portfolio Approach to Green Power

Barrett Stambler
Andrea Kelly

June 26, 1998

Oregon Pilot - Testing Two Choice Models

- Direct Access
  - Schools: statewide; no minimum load size
  - Industrial: statewide; over 5 MW
  - Klamath County: Large commercial and industrial
- Portfolio Access
  - Klamath County: approximately 30,000 smaller customers

Why Portfolio?

- Initial pilot proposal included only Direct Access
- Significant concerns about Direct Access for smaller customers from OPUC, CUB, Environmental groups
- Allows a step toward Direct Access bringing choices to customers
- Evaluation of pilot will inform 1999 Legislature

Portfolio - Klamath County

- Residential, Small Commercial, Irrigation
  - Approximately 100 kW or less
- Portfolio of Pricing Options
  - Standard Utility Price Offer
  - Market Price Offer
  - Green Product Offer
  - Community Price Offer
- ESPs may offer Portfolio Options

Portfolio Access Model - Additional Details

- Two 30-day subscription periods in pilot
  - two 6-month terms
- ESPs may bid to provide Market or Green Offers; none participated in first ballot
  - PUC receives all bids and forwards to PacifiCorp
  - PacifiCorp prepares ballot with uniform product information; random order of options within category
  - Ballot is reviewed by PUC prior to mailing

Portfolio Access Model - Initial Results

- Results of first subscription:
  - 6% of eligible customers switched
  - 74% Market
  - 15% Green
  - 6% Community
  - 5% incomplete

Portfolio Pricing Options

- Standard Utility Price Offer
  - Equivalent to standard tariff
- Market Price Offer
  - Variable prices based on published wholesale price index
- Community Offer
  - 5% premium over standard tariff goes to low-income assistance in county

PacifiCorp 7

Green Portfolio Option

- Process for Establishing Guidelines for Green Products
- Formed advisory committee of representative Northwest environmental groups
  - Included Renewable Northwest Project, Northwest Energy Coalition, Northwest Environmental Advocates, PacifiCorp, Foresight (ESP), Oregon PUC
  - Created minimum standards for green products

PacifiCorp 8

Standards for Green Portfolio Product

- At least 60% low-impact resources (e.g. landfill gas, wind, geothermal, solar, hydro, biomass)
- Maximum 15% of 60% can be low-impact hydro
- 25% natural gas from plants with heat rate of 7400 mbtu/kwh or better or low-impact hydro
- 15% system power
- Any product that met criteria could participate in green component of portfolio

PacifiCorp 9

PacifiCorp's Green Product

- Green Offer
  - Company's offering consists of:
    - 100% renewable energy resources
    - 50% geothermal energy
    - 20% from Wyoming windplant under construction

PacifiCorp 10

Price of Green Product

- Price offer for Green Product
  - Approx. 10% more per month
  - Average monthly bill of $58
  - $5.80 per month premium
  - Charged $7.80 more per month but PacifiCorp provided $2/MWH credit for renewable energy resources

PacifiCorp 11

ONTARIO HYDRO RETAIL MERCHANT

GreenChoice Generation

Bob McRae
Ontario Hydro
3rd National Green Power Conference
June 26, 1998

ONTARIO HYDRO RETAIL MERCHANT

GreenChoice Generation

Our Vision

To be the low cost provider of highly valued green energy.

ONTARIO HYDRO RETAIL MERCHANT

Strategy

- Mutual fund-like price averaging pool
- Cost effective purchasing
- Bilateral financial contracts
- "Wireless" product
- Minimum operating costs
- Low pricie(4.5 to 3.0 ¢/kWh - discounts for longer term)

ONTARIO HYDRO RETAIL MERCHANT

The GreenChoice Offer

- Not an energy offer
- Allows customers to choose how their energy is made i.e. from certified green energy sources rather than the "normal" Ontario generation mix
- All GreenChoice Generation certified through Environment Canada's Environmental Choice Program

ONTARIO HYDRO RETAIL MERCHANT

Ecologo™

ONTARIO HYDRO RETAIL MERCHANT

The GreenChoice Offer cont.

Non-physical bilateral contract

- Contract for differences
- Aimed at, but not limited to, business customers
- No physical contract for the commodity
- Sold independently of the energy contract
- Does not require metering/monthly billing

ONTARIO HYDRO RETAIL MERCHANT

Why a Price Averaging pool?

- Manage the price/risk associated with RETs
- Generation projects in portfolio must reflect maximum value to customer
  - must balance customer expectations and project costs to optimize value

ONTARIO HYDRO RETAIL MERCHANT

The Fundamental Value Proposition

- "New generation that creates incremental benefits if I buy it"
- "Price capped or fixed price deals to protect me from the cost risk"
- "Generation from sources I view as green"
- "Provides the knowledge that I am doing the right thing"
- "A social or value statement that I can use to leverage the sale of my own product"

ONTARIO HYDRO RETAIL MERCHANT

Competencies for Success

- **Marketing/Selling to customers**
  - prospecting/customer preference research
  - reaching customers
  - marketing alliances
  - order Fulfillment
  - customer service
- **Market and competitor analysis**
- **Buying Green Electricity**
  - cost effective and risk managed
  - meeting the generation choice expectations of customers as they evolve
  - getting power delivered when it is needed
  - contract management
- **New offer development (as required)**

ONTARIO HYDRO RETAIL MERCHANT

Successful Green Energy Programs

- Range features or choices
- Financial structure that is clear and accountable;
- Well understood rationale for the program
- Transparent accounting and frequent reporting
- Partnerships

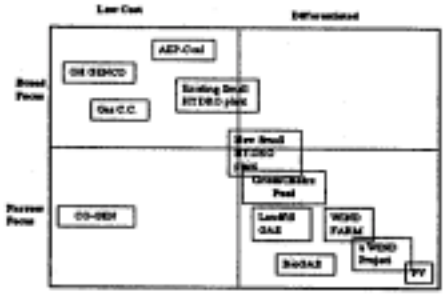
ONTARIO HYDRO RETAIL MERCHANT

Things To Avoid

- Selling green energy that is not incremental
- Programs that make false claims; and
- Programs that offer vague promises

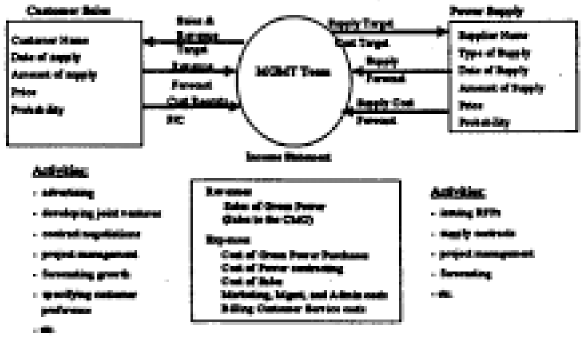
ONTARIO HYDRO RETAIL MERCHANT

"Porter" Style Analysis



ONTARIO HYDRO RETAIL MERCHANT

GreenChoice Marketing Model



ONTARIO HYDRO RETAIL MERCHANT

Dimensions of Competition and Our Approach to It

- Price
  - supply and program cost management
  - Volume-based pricing
  - Customer acceptance of "greenness"
  - Ecologo certification of all purchases
- Flexibility
  - where it doesn't drive costs up, or
  - where customers willing to pay for it
- Customer service
  - design to be low cost
- Administrative costs
  - design to be low cost

MARKETING PARTNERSHIPS

A Grassroots, Community-Based
Approach to Selling Green Power

Rudd Mayer
Land and Water Fund of the Rockies
3rd National Green Power Conference
Sacramento, California
June 25-26, 1998

Primary Partnership with Enviro Group

- Customer acquisition costs too high for suppliers *by themselves* to reach and educate customers
- enviro group a catalyst for a series of public policy and private actions in the community
- these actions created by partnerships with the supplier, the nonprofit community, state/local governments and business
- mechanism: a grassroots campaign organized and managed by a local enviro group

Getting Public Policy Actions

- The Governor
  - state purchase: Governor's residence
  - Governor's Challenge (250/2010)
  - statewide task force to discuss strategy for meeting challenge
  - media: press conference to recognize businesses, cities, nonprofits buying green power
- State Agencies
  - Office of Energy Conservation: educate citizens, proactive role with media, funding for nonprofits to market green power
  - CDPHE: sign up staff and employees
- County Agencies: the health department buys green power

Getting Public Policy Actions

- Municipalities
  - 7 cities and towns in Colorado (from Denver to small mountain towns)
  - resolutions by city councils
  - city resources to promote green power: water bill, local access TV, citywide mailings
  - city "environmental plans" to include green power

Getting Public Policy Actions

- Grassroots Campaign Facilitates Purchases by Governmental Entities
  - green power a community ethic like recycling
  - not premium product, a community value
- Public Policies Crucial
  - for evolution of green power ethic
  - so choice will lead to substantial renewable energy acquisitions

Driving Private Actions in the Community

- Chambers of Commerce
  - buy green power
  - President's letter to leading businesses
  - newsletter article and sign up information
  - as nonprofit can be alternative to enviro group as coordinator of community-based campaign

Driving Private Actions in the Community

- Large Commercial/Industrial Leadership Buys
  - enviro entre at high corporate level
  - create value tailored to each company
  - employee campaigns: focus groups, incentives, goals, tailored messages, delivery mechanisms
- Business Challenge Led by CEO of Industrial Leader
- University of Colorado Experience
  - provider vs. enviro approach, working together to create value

Driving Private Actions in the Community

- Hospitals: health benefits message
- Church Networks: new environmental advocacy
  - Episcopal Enviro Coalition groundwork for interfaith clean power movement
- Insurance Companies: climate change
  - signed statement at UN (U.S./ Employers Re)

Driving Private Actions in the Community

- Nonprofit Groups
  - market green power in newsletters
  - include green power in outreach activities
- Tables
  - community events and high traffic locations
  - organic supermarkets
  - local fairs and festivals
  - farmer's markets

Driving Private Actions in the Community

- High Schools and Colleges
  - private vs. public
- Grade Schools
  - renewable energy teaching unit
  - penny drive to buy green power
  - take home sign up brochures

Driving Private Actions in the Community

- Green Builders/Developers
  - purchase green power for offices
  - promote at model homes and home tours
  - information in new homeowner packets
  - buy green power for new homeowner for 1 year
  - Green Builder Check List: green power option

Driving Private Actions in the Community

- Signs, Displays and Scoreboards
  - high visibility green power buyers
  - zoo, museum, ball park, stadium
- Building Owners/Property Managers
  - allow individual businesses in pedestrian malls, shopping centers, office towers to buy green power
  - simple contracts to eliminate owner/manager risk

Driving Private Actions in the Community

- Wind Power Web Site
  - online sign up
  - interactive enviro benefits calculation
  - names of businesses buying green power
  - link to baseline renewable energy site, sites of green power providers in Colorado

Conclusion

- Pessimism
  - providers may not be able to move market without partnerships that drive public policy and private actions
- Optimism
  - Colorado partnerships a powerful example to transfer to other states
- Grassroots Campaign
  - can add value/traction for certification and labeling
  - can create market pull for green power

Epilogue

- Unforeseen Benefits of Grassroots Campaign
  - 5th utility (2nd largest in state) to offer green power to dozens of distribution coops in Colorado and Wyoming
  - almost 100% customer choice of green power in Colorado by 1999
  - power plants cleaned up: Public Service Company of Colorado (largest utility in state) responds to demonstrated customer preference for clean power and agrees to clean up its Denver coal-burning power plants

Target:
Renewables and Green Power Marketing

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